Canon

ENGLISH EDITION

SERVICE MANUAL

CANON DIGITAL CAMERA

PowerShot G1

MENU

GENERAL INFORMATION

REPAIR INFORMATION

PARTS CATALOG

ELECTRIC DIAGRAMS

Digital Imaging Products Service Dept.

Canon

PowerShot G1 **C83-1004**

SERVICE MANUAL

Application

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First published Oct. 2000

GENERAL INFORMATION

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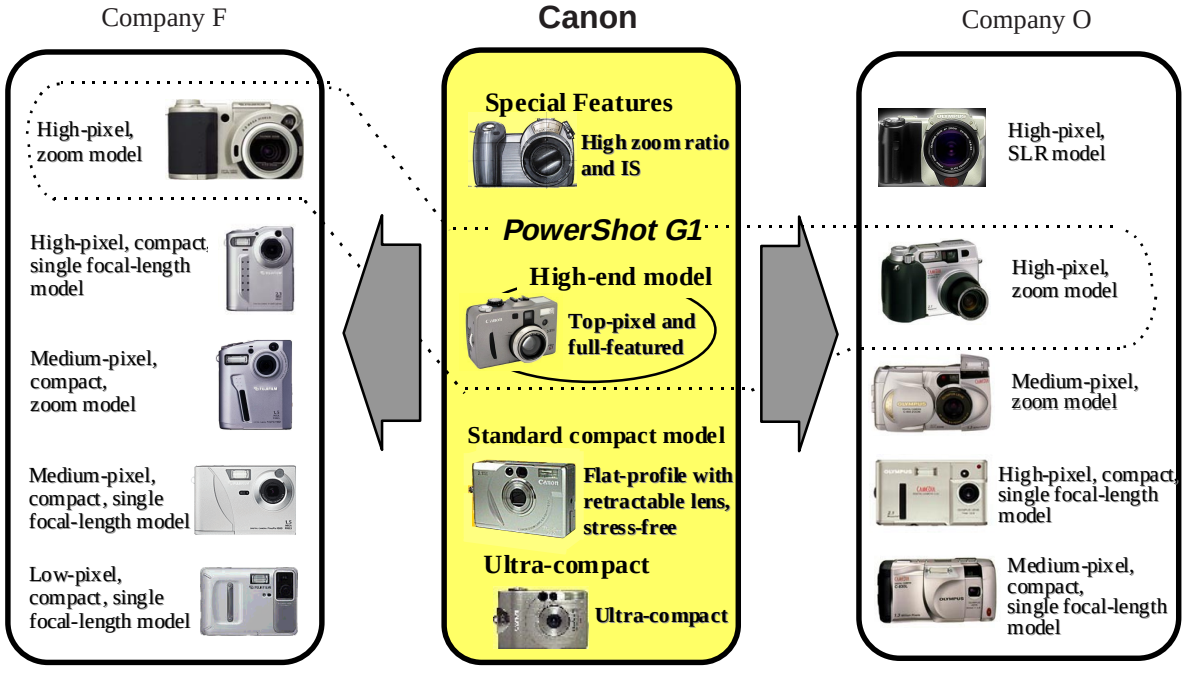
1. Product Strategy

1-1 Background to commerciarize

The compact digital camera market got a big break and reached a major plateau with the emergence of 2-megapixel models. The market is expected to henceforth divide into two major directions: High-end models with more pixels and more sophisticated features, and popular models with around 2-megapixels and more refined features.
Meanwhile, the top-tier digital camera makers are offering a complete range from low-end to high-end models with short product cycles. Their blanket strategy hinders Canon from catching up.
In order for Canon to join the top tier (in terms of market share) from the year 2000, it is essential for us to expand our product line-up in the two directions described above to compete head-to-head with the other makers.
We have to incorporate specifications that would satisfy advanced amateurs such as SLR camera users who demand high image quality and high-end features and commercial users who require pro-level specs. At the same time, we must increase our market share in the market segment favoring flat-profile and ultra-compact models which have been Canon's specialty. In these ways, we must completely fend off rival companies.
Amid this market background, we developed the PowerShot G1, a 3-megapixel, full-featured camera with a 3x zoom lens and high image quality.

1-2 Product Objectives

The PowerShot G1 has 3 megapixels which is expected to be the top pixel count for compact digital cameras in 2000. With its high pixel count and many features, the G1 has been designed to be at the top of the high-end group of compact digital cameras. It is a higher-levelmodel than the PowerShot S20. It is the start of a series of top pixel models to help secure Canon's market share in the high-end, compact digital camera market.
Even if the pixel race reaches the 4-megapixel level from 2001, the PowerShot G1 can still serve as the base model for higher pixel models. This minimizes the development costs of future high-end models.



1-3 Product Concept

The PowerShot G1 is the top-of-the-line PowerShot camera standing on the five pillars of full features, high image quality, operation ease, system accessories and application software. It is a high-end, compact digital camera targeting advanced amateurs and semi-professionals. (The reference pages are in brackets.)

Full Features

-Manual settings (aperture-priority AE, shutter speed-priority AE, manual focus, manual exposure, flash exposure compensation, exposure compensation) [New! p.G4]
-12 EOS-based picture-taking modes (Auto, Creative Zone, Image Programmed Control Zone) [New! p.G5]
-Movie recording and playback with sound [New! p.G6]
-Slow shutter speed mode up to 8 sec. (With noise reduction) [New! p.G6]
-Auto Exposure Bracketing (AEB) [New! p.G6]
-Built-in flash with five control modes [New! p.G6]
-Macro mode allows close-up photography up to 6cm at the wide-angle end, 20cm at telephoto end. [New! p.G7]
-Wireless controller [New! p.G7]
-AE lock/FE lock
-Center-weighted averaging metering and spot metering
-Digital tele-converter feature (2x/4x)
-Image enlargement during playback (2.5x/5x [New!])
-Continuous shooting (approx. 1.7 images/sec.)
-Self-timer shooting

High Image Quality

-High resolution, 1/1.8-inch CCD with 3.34 million pixels [p.G7]
-High-resolution, 3x zoom lens [New! p.G8]
-Wide range of ISO equivalent settings (Auto/ISO 50/100/200/400 equivalent) [New! p.G8]
-High-precision white balance with five position preset white balance and Custom white balance function [New! p.G8]
-New RAW mode [p.G9]
-Dedicated digital signal-processing IC for high-precision processing

Operation Ease

-Vari-angle LCD monitor [p.G10]
-New UI for easy-to-read controls (Omni selector, stacked two mode dials, large display panel) [New! p.G10]
-Switching between picture-taking and playback [New! p.G10]
-Switchable AF mode (Continuous/Single) [New! p.G10]
-Switchable video output format (NTSC/PAL) [New! p.G10]
- Optical viewfinder with dioptric correction [p.G11]
-Shutter-release sound like a film-based camera [New! p.G11]
-Digital signal-processing IC + Buffer memory for stress-free operation [p.G11]
-Higher capacity Li-Ion battery [New! p.G12]
-High-speed fast forward playback
-Compatible with CompactFlash Type II media for high-capacity storage

System Accessories

-Wide converter lens, tele-converter lens, close-up lens [New! p.G12]
-Compatible with EOS-dedicated EX-series Speedlites mode for EOS cameras. [p.G12]
-New power source [New! p.G13]

Application Software

-ZoomBrowser EX 2.4/ImageBrowser 1.4 featuring improved operation ease. [New! p.G13]
-Photorecord 1.2 for easy layout and printing of many pictures. [New! p.G13]
-PhotoStitch 3.1 for creating panoramic pictures. [p.G14]
-RemoteCapture 1.1 for remote picture-taking with a PC. [New! p.G14]
-RS-232C TWAIN Driver 3.4/USB TWAIN Driver 3.4/Plug-in Module 3.4/ZoomBrowser EX 2.4/ ImageBrowser 1.4 for adjusting image quality parameters. [New! p.G14]
-Reputable third-party applications [New! p.G15]
Adobe Photoshop LE 5.0 (Image-editing)
Apple QuickTime 4.1 (Video playback/QVTR file creation)

2. Overview

2-1 Features

[Full Features]

-Manual settings

<Aperture-priority AE and shutter speed-priority AE>

For the exposure control, the PowerShot G1 has the aperture-priority AE and shutter speed-priority AE modes. With aperture-priority AE, you set the desired aperture and the camera sets the shutter speed automatically to match the subject brightness. Setting a large aperture increases the background blur which better isolates the subject in the foreground. Setting a small aperture attains greater depth of field to make subjects both in the foreground and background look sharper. The farther you zoom in to your subject, the better the background blur. With shutter speed-priority AE, you set the desired shutter speed and the camera sets the aperture automatically to match the subject brightness. A fast shutter speed can freeze the subject's movement, and a slow shutter speed can blur the subject to give the impression of motion.

<Manual focus>

Manual focusing is possible with the PowerShot G1. In sports or wildlife photography, you can set a specific focusing distance previously and take the shot when the subject comes into focus.

Manual focus is also effective when autofocusing is not possible in the following cases:

-Extremely low-contrast subjects
-Near and far objects overlaid at the same position
-Severe backlit conditions or highly reflective surfaces
-Extremely bright objects ata the center of the composition
-Very low-light scenes

The focal point can be moved manually by holding down the MF button and pressing the Omni Selector. The MF indicator is shown on the LCD monitor as a reference for the focal range.

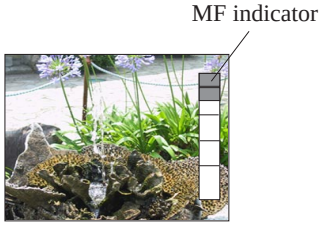


Fig.2-1 MF indicator

<Focus Lock>
The camera's auto focus system brings the object into focus, then the focus is locked by pressing the MF button. This allows the user to release his or her finger from SW1.

	Exposure	Focus
Normal	Locks at SW1. Unlocks when SW1 is released.	Locks at SW1. Unlocks when SW1 is released.
Manual Focus	Locks at SW1. Unlocks when SW1 is released.	Locks with MF button. Unlocks when MF button is pressed again.
Focus Lock	Locks at SW1. Unlocks when SW1 is released.	Locks at SW1.>>Unlocks when SW1 is released. Locks at SW1 and keep to lock at MF button>> Unlocks when MF button is pressed again.
AE Lock	Locks with AE lock button. Unlocks with any operation except SW1.	Locks at SW1. Unlocks when SW1 is released.
FE Lock	Locks with FE lock button. Unlocks with any operation except SW1.	Locks at SW1. Unlocks when SW1 is released.

Table 2-1 User interface and AE/AF Control

<Manual exposure>
The PowerShot G1 provides manual exposure as one of the exposure control modes. Manual exposure enables the user to set the aperture manually. The user can take pictures as he or she desires, with no automatic exposure adjustments from the camera. This mode is suitable, for studio photography or taking pictures of fireworks, for example, since exposure control can be set as the user intends. Also, by using the manual exposure and the manual focus modes together, you can greatly reduce the time lag between SW1 and SW2.

At EV 10

Aperture (F)	2.8	4.0	5.6	8.0
Shutter speed (S)	1/125	1/60	1/30	1/15

Table 2-2 Sample correlation between aperture and shutter speed. (at ISO 100 equivalent)

<Flash exposure compensation>
If the brightness between the subject and background is very different and flash is used, underexposure or over exposure may result. To prevent this, the PowerShot G1 enables you to set flash exposure compensation up to +/-2 stops in 1/3-stop increments.

-12 EOS-based picture-taking modes (Auto, Creative Zone, Image Programmed Control Zone)
The PowerShot G1 provides Creative Zone modes and Image programmed Cntrol Zone modes in addition to Auto. It enables advanced amateurs and semi-pros to obtain the desired results with their pictures. With Creative Zone modes, you can set the exposure, shutter speed, etc., manually. And with Image Programmed Control Zone modes, you can select the mode that best matches the subject.
In the Auto mode, you can change the recording pixels and the JPEG compression rate to better suit your needs.

		Description	Effcets
Creative	Manual	User sets both aperture and shutter speed.	The user has complete control.
	Av	User sets the aperture (camera sets the shutter speed).	The depth of field can be controlled.
	Tv	User sets the shutter speed (camera sets the aperture).	The subject's motion in the picture can be controlled.
	Program	Camera sets both aperture and shutter speed. (User sets almost parameters)	Easy picture-taking with a suitable aperture and shutter speed set.
Image	Auto	Camera sets all parameters. (User sets recording pixels and JPEG compression only)	Prevents the user from making any errors in the camera settings.
	Pan Focus	Fixed focal length (wide-end) used for maximum depth of field. (Effective at 65 cm [wide-end] to infinity)	Since AF is not executed, the picture can be taken faster. (At the wide-end only.)
	Portrait	A larger aperture is used.	To obtain better background blur for a portrait.
	Landscape	A smaller aperture is used.	Both the foreground and background are in sharp focus.
	Night Scene	Backgound exposure is correct since flash with slow sync speed is used.	A suitable exposure is obtained for a subject in front of a sunset or night scene.
	B/W	The color gain is set to 0.	Makes any text information more readable or gives a nostalgic B/W look.
	StitchAssist	An aid for creating a panoramic photo with a PC.	Makes easy and high precision stitch on PhotoStitch.
	Movie	320x240 video clips at 15 frames/sec. (max. 30 sec.).	Ideal for studying the subject's movement or to record a sequence.

Table 2-3 Creative Zone modes and Programmed Image Control Zone modes

-Movie recording and playback

The PowerShot G1 can record a QVGA (320X240 pixels) video clip (with audio) at 15 frames per second up to approximately 30 sec. The movie can be played back on the built-in LCD monitor or on a TV monitor. The movie is ideal for studying the subject's movement or to record a sequence. The movie is compressed with Motion JPEG and saved as an AVI file. Motion JPEG compresses each frame of the video in JPEG format.

Note:

- If the unoccupied capacity of the CF card is less than the capacity the buffer memory, movie recording is restricted to the capacity of the CF card.
- When the buffer memory becomes full while a movie is being recorded, the data is written to the CompactFlash card. During the writing to the CF card, the movie recording cannot proceed further.
- The focal length, exposure setting, white balance, and lens zoom position set for the first movie frame are used for the rest of the video clip.

-Slow shutter speed mode up to 8 sec. (With noise reduction)

In the shutter speed-priority AE and manual modes, a slow shutter speed up to 8 sec. long is possible. It is useful in low light when flash cannot be used.

Normally with a CCD, long exposures tend to create noticeable noise. The PowerShot G1 therefore executes noise reduction for shutter speeds 1.3 sec. or longer.

The method can be described as follows: After the user takes a picture, the camera itself takes a picture, with the aperture closed, for exactly the same length of time. This results in only noise data, and the camera subtracts the amount of that noise data from the user's image, producing a noiseless image.

Note: When noise reduction is executed, some extra time is required while the black data is taken.

-Auto Exposure Bracketing (AEB)

The PowerShot G1 provides Auto Exposure Bracketing (AEB) which takes three shots bracketed automatically within the set range. The three bracketed shots are taken with a single shutter release.

If there is a large difference between the light levels of the main subject and the background, or if a highly reflective object is in the scene, it is often difficult to obtain a proper exposure value, making exposure compensation necessary. With this feature, the camera automatically takes three pictures with three different exposure settings, so it is not necessary for the user to repeatedly shoot the same subject with different exposure settings himself. The framing of the picture also remains virtually the same during AEB shooting.

The shots can be bracketed up to +/-2 stops at 1/3-stop increments. The bracketing sequence is normal, - compensation, and + compensation.

If exposure compensation is also set, the bracketing range will center on the exposure compensation amount and it can be set up to +/-2 stops at 1/3-stop increments.

Note: In using flash, AEB is not available.

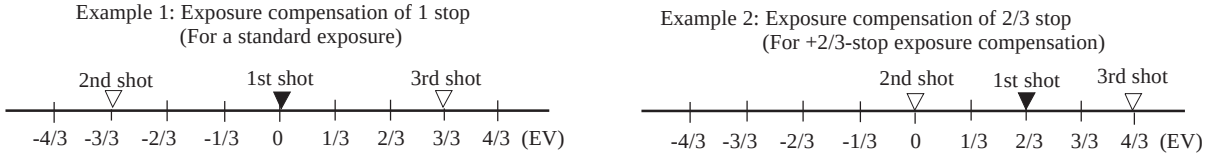

Example 1: Exposure compensation of 1 stop
(For a standard exposure)
2nd shot
1st shot
3rd shot
-4/3 -3/3 -2/3 -1/3 0 1/3 2/3 3/3 4/3 (EV)
Example 2: Exposure compensation of 2/3 stop
(For +2/3-stop exposure compensation)
2nd shot
1st shot
3rd shot
-4/3 -3/3 -2/3 -1/3 0 1/3 2/3 3/3 4/3 (EV)

Fig. 2-2 AEB.

-Built-in flash with five control modes

In addition to the auto flash, auto red-eye reduction, manual flash, and flash off modes, the PowerShot G1 also provides the manual red-eye reduction mode. Previous models only had auto red-eye reduction, so the red-eye reduction light would only emit when necessary. But with the manual red-eye reduction mode, you can emit the red-eye reduction light at will.

-Macro mode allows close-up photography up to 6cm at the wide-angle end, 20cm at telephoto end.

PowerShot G1 allows you to perform close-up photography up to 6cm from the subject at the wide-angle end. The maximum shooting area is 82X60mm at the wide angle end and 84X62 mm at the telephoto end.

If you attach the optional close-up lens with macro mode, the shooting area is 50X38 mm at the telephoto end.

	PS G1	PS G1 (in attaching 250D 58mm)	IXY DIGITAL	PS S20
The shooting area maximum magnification (mm)	82X60 (Wide angle end, 6cm)	50X38 (Telephoto end, 12cm)	102X76 (Wide angle end, 10cm)	76X57 (Telephoto end, 12cm)

Table 2-4 The shooting area maximum magnification.

-Wireless controller

The dedicated wireless controller can be used to operate the PowerShot G1. Press the DRIVE button to set the camera to the Self-timer mode. Then you can use the wireless controller to take still pictures, zoom the lens to the wide or telephoto end (Movie is shooting operation only) and display button, operate the Omni Selector (image forward and scroll), movie playback, display button, switch between single and multiple image playback and enlarge the image during playback.

Note: When you use the wireless controller to take pictures, the picture is taken about 2 sec. after you press the wireless controller's shutter button. This delay is provided in case you are also to be in the picture.

[High Image Quality]

-High resolution (2,048 (H) X 1,536 (V)) with 1/1.8-inch 3.34M pixel CCD

Using photo ink and the smallest ink droplets possible (4 pl), the Canon BJ printers BJ F850 (BJC-8200/BJC-8200Photo) offers 1,200 dpi, a quality sufficient enough to reproduce A4 print size (8"X 10") photo quality images. The PowerShot S10 (on sale Fall 1999) and IXY DIGITAL (on sale May (June) 2000), both employ a 2.11-megapixel CCD, achieving a resplution of 4.7 lp/mm, adequate for postcard-size prints when printed out on the 300-dpi dye-sublimation CD-300 Digital Printers. This resolution is not sufficient for A4-size prints.

Images taken with the PowerShot G1, having a 3.34-megapixel CCD, can be printed with the BJC-F850 for acceptable print quality A4-size (8" X 10") prints.

Note: lp/mm (line-pair mm) : Resolving power is expressed in the number of pairs of black and white lines per milimeters.

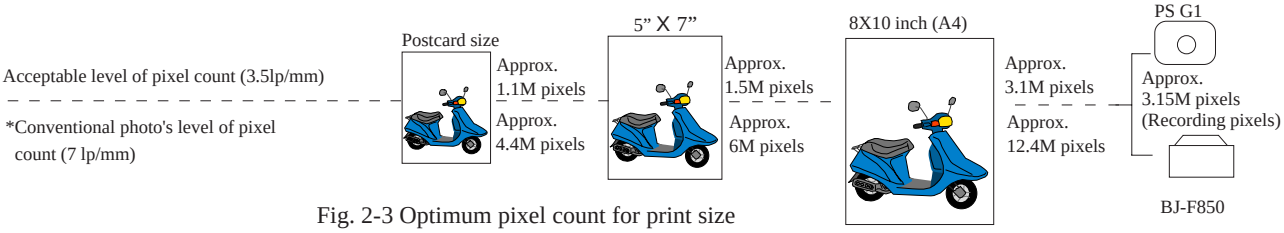


Fig. 2-3 Optimum pixel count for print size

-High-resolution zoom lens with advanced optical technologies

The PowerShot G1 is equipped with a 7 - 21mm 3X zoom lens (equivalent to 34 - 102mm in 35mm format) that is suited for a wide range of picture-taking, from landscapes to snapshots. Also, the maximum aperture is f/2.0-2.5 which is the largest for a digital still camera. The iris-type aperture can give excellent background blur for portraits.

The lens consists of 8 elements in 7 groups (Fig. 2-4). Two glass-molded aspherical elements with a high refractive index are positioned for maximum effect in correcting aberrations. Also, in conjunction with the 3.34 M pixel CCD's fine pixel pitch (3.45 micro-millimeters), group 3 has an cemented element to correct the chromatic aberrations (throughout the entire focal length range) that the aspherical element is unable to correct. As a result, high optical performance is attained with only a few lens elements making it suitable for a retractable lens.

Also, by adjusting the CCD's tilt, the image is focused evenly throughout.

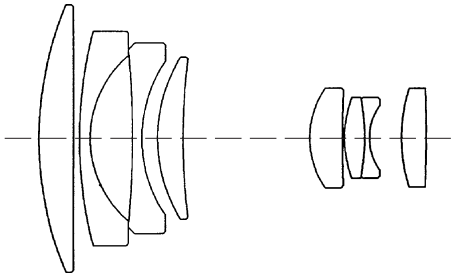


Fig. 2-4 PowerShot G1 lens configuration.

-Wide exposure sensitivity range

Film-based cameras enable you to freely set the film speed to suit the picture-taking condition. There is a close correlation between the film speed and image quality. Normally, a slow-speed film results in high image quality (fine grain). High-speed film enables faster shutter speeds (to prevent blur) and smaller apertures (for greater depth of field) to be used.

In the PowerShot G1's Creative Zone modes, you can select the exposure sensitivity as with the film speed with film-based cameras. You can select Auto, ISO 50, 100, 200, or 400 to suit the picture-taking condition. The ISO 50 setting has been added for still subjects when you can use a slow shutter speed or for bright scenes when you can use a faster shutter speed for minimal noise.

At the Auto setting, the camera selects the optimum exposure sensitivity automatically within ISO 50 to 100.

-Auto cannot be set in the Manual mode.

-High-precision white balance (5 preset white balance + Custom white balance)

For PowerShot G1's high-precision white balance control, the image is divided into 100,000 blocks and white is searched and calculate.

In addition to the usual white balance settings (daylight, overcast, tungsten, and fluorescent light), the new "flash" setting has been added to optimize the color temperature of flash pictures. White balance is improved when flash is used. Also, as with camcorders, the custom white balance feature enables you to set the desired standard white with a sheet of white paper under a specific light source. The custom white balance setting is then stored in the camera. This feature is useful when you have special lighting conditions or two or more different light sources and the Auto or preset white balance setting cannot obtain the white balance you want. The custom white balance setting is retained by the camera even after the camera is turned off.

-New RAW mode

Canon has greatly improved the RAW application employed in the PowerShot A series, developing the PowerShot G1's New RAW mode. The advantage of RAW modes is that they allow users to obtain original image data, since image data is recorded to memory from the CCD without any image processing. With RAW mode images, users can process images as they desire, setting and changing the parameters, "developing"*1 the RAW data into an image., setting and changing the parameters. We adopted the reversible image compression*2 method for the PowerShot G1, so now RAW images require only approximately 60% the amount of memory necessary for the PowerShot A Series. The PowerShot G1 also enables playback of images on the LCD monitor or an external monitor. (Currently, the only digital cameras capable of this are the EOS D30, PowerShot G1 and the PowerShot Pro90.)

The RAW image data is processed by ZoomBrowser EX 2.4, ImageBrowser 1.4, TWAIN Driver 3.4 and Plug-In Module 3.4 application software, which are bundled with the PowerShot G1. Users can adjust image parameters such as white balance, contrast, sharpness and color saturation. The adjusted image data is stored in TIFF format (TIFF is the default format, but users can also choose among BMP, JPEG, and others.).

While some competitors' models use TIFF format as a high image quality mode, most of these models record images as 8 bit data after processing white balance, ganmma-compensation, etc. Files of this type (RGB TIFF format) are four times *3 the size of the new RAW mode type files.

Moreover, image quality declines when these images are processed on PC's using retouch software, because image processing is carried out twice.

*1 In the process of developing, RGB signals are created from RAW data.

*2 In this method, original image data can be completely restored, as opposed to non-reversible compression methods such as JPEG, whose original data cannot be restored.

*3 A comparison of data file size between RAW and TIFF

-PowerShot G1's number of recording pixels: 2048X1536

RAW data file size: 2048X1536X10 (quantization of each pixels)X0.61 (data compression)÷ 8 (convert to byte) ≒ 2.5 MB..... **1**

TIFF format filesize :2048X1536X 8 (quantization of each pixels)X 3 (separate to RGB)÷ 8 (convert to byte)≒ 9.4 MB..... **2**

1÷**2** = 1/3.76≒1/4

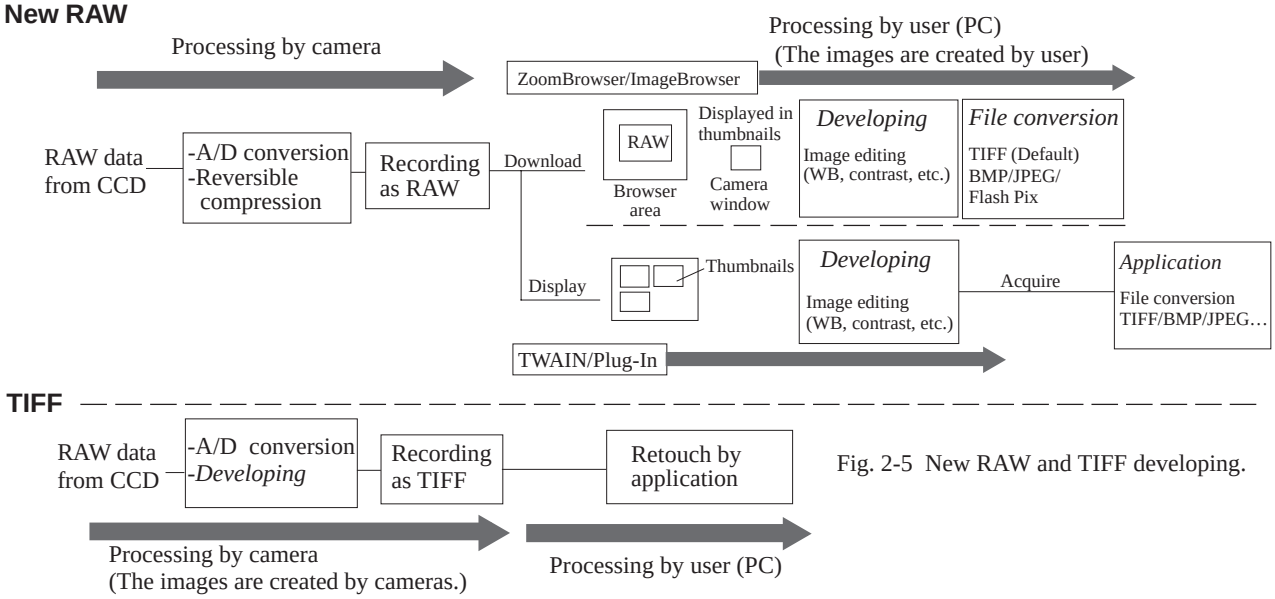


Fig. 2-5 New RAW and TIFF developing.

File format	Image quality	File size	Compatibility	Playback with camera	Features
RAW (old)	◎	X-△	X	X (Thumbnail only)	High image quality, however impossible to set to parameters of image quality
RAW (new)	◎	△	X	O	Possible to set parameters of image quality to original data.
Super Fine	◎	△	O	O	High image quality, however not reversible compression/ impossible to set to parameters of image quality
Fine	O	O	O	O	Small file size, however not reversible compression
TIFF	◎	X	O	O	High image quality, however large file size./impossible to set to parameters of image quality

Table 2-5 Comparison of each file format.

[Operation Ease]

-Vari-angle LCD monitor

Like the PowerShot Pro70, the PowerShot G1 is equipped with a vari-angle LCD monitor (1.8-inch)* . The monitor can be rotated so you can shoot from various angles.
Also, when the LCD monitor is rotated toward the front (for self-shooting), the monitor displays a mirror image so you can see yourself correctly.

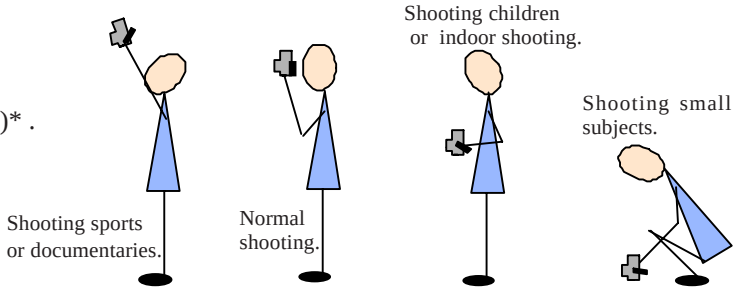


Fig. 2-6 Sample uses of the vari-angle LCD monitor.

* The PowerShot Pro70 uses a 2.0-inch monitor.

-New UI for easy-to-read controls

The PowerShot G1 has many features such as manual settings in addition to Image Programmed Control Zone modes. To make camera operation easy even with all these features, the PowerShot G1 has the Main Dial and Mode Dial stacked together and an on-screen menu that does not have a deep hierarchical structure. You can therefore quickly set the desired mode or setting. The Main Dial below the Mode Dial provides the power OFF, camera ON, playback, and PC mode settings. The Mode Dial is for setting seven Image Programmed Control Zone modes, Auto, and four Creative Zone modes. Also, frequently used features such as exposure compensation, the macro function, etc., have their own buttons, and there is a Omni Selector (which was well received on the PowerShot S10 and S20). The user interface is thereby quick and simple.
A large Display panel is provided to make it easy to check the camera's status at a glance (refer to p.G19).

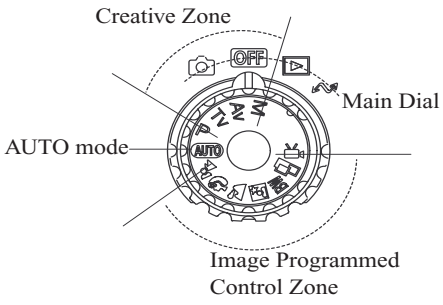


Fig. 2-7 Mode Dial.

-Switching between picture-taking and playback

When you switch quickly between picture-taking and playback with the PowerShot G1, the lens does not retract. Since the lens retraction time is eliminated, you can switch between picture-taking and playback instantly. Right after taking pictures, you can playback the pictures on the monitor and delete the unwanted ones. Then you can go back to taking pictures.

Note : The lens will not retract if the Main Dial is changed from camera mode to playback mode via the off position within 0.8 seconds.

-Continuous AF (in using LCD monitor only)

With the PowerShot G1, you can select either single AF (operates at SW1) or continuous AF (the default) for the AF mode. In the continuous AF mode, autofocusing operates even when you are not pressing the shutter button.
The LCD monitor thus always displays a focused image which makes it easier to identify the subject on the monitor.
To respond to changes in the subject's position and to enhance AF precision, the focusing information at SW1 is used and the focusing is rescanned within a narrow range centering on SW1. This makes autofocusing more precise and faster than in the single AF mode.

Note : AF mode is fixed to Single AF when LCD viewfinder is OFF.

-Switchable video output format (NTSC/PAL)

The PowerShot G1 provides the setting menu to set the video output format to either NTSC or PAL. This enables you to playback the images on a TV monitor in various countries.

Note :
-For areas using SECAM (such as France), playback is possible in the PAL format. However, the image will be in black and white.
-The language options (five NTSC languages and ten PAL languages) remain the same regardless of a change of video format.

-Optical viewfinder with dioptric correction

Usually, a camera's viewfinder diopter is set to match the nearest and farthest distances that the eyes of most people can clearly see. However, for near-sighted, far-sighted, and presbyopic users, dioptric correction is necessary to see such objects clearly.

The PowerShot G1's optical viewfinder enables dioptric correction to suit various eyesights of users.

-Shutter-release sound like a film-based camera

The PowerShot G1 provides a shutter-release sound after the picture is taken (when the exposure ends). The subject can thereby hear when the picture is taken even in noisy environments. The shutter sound is based on the WAVE format. The sound volume can be adjusted from 0 to 5 as necessary when in noisy areas.

Note : The beep sounds at the end of shooting, if users set shutter sound to OFF.

-Digital signal-processing IC for stress-free, quick picture-taking.

The PowerShot G1 uses a Canon-developed digital signal processing IC. Despite the camera's high pixel count, the digital signal processing is quick response due to this IC. The PowerShot G1 also has a buffer memory where the captured image is temporarily stored. As the digital signal processing IC and buffer memory work in tandem, a short shooting interval of approx. 1.8 sec. is achieved.

The PowerShot G1's buffer memory capacity is approximately four times that of the PowerShot S20, enabling high performance continuous shooting. Approximate 10 images at Large/Fine mode can be taken, with a maintained shooting speed of 1.7 images per second.

Moreover, operations such as camera start-up, high-speed search mode (during playback), image enlargement, and image scrolling which normally require a lot of processing time can be executed swiftly, thanks to the digital signal processing IC's high-speed compression and decompression operations.

	using OVF	using EVF
Shutter release time	Approx. 0.04sec.	Approx. 0.07sec.
Shooting interval	Approx. 2.4sec.	Approx. 1.8sec.

- The above times will vary depending on the subject.
- The above does not apply to special techniques such as slow speed shutter.

Fig. 2-9 Shutter release time lag and shooting interval

-Higher capacity Li-Ion battery

The PowerShot G1 utilizes a rechargeable lithium-ion battery (BP-511). This lithium battery has about the same capacity, yet half the weight per volume as the nickel-hydride battery used by the PowerShot A-series and S-series cameras. And it has no memory effect.

As the BP-511 is already being used in other products such as the EOS D30 and the PowerShot PRO90 IS, as well as two of Canon's camcorders (the FV-2 and FV-10) so can be interchanged among all of these products.

Model	PowerShot G1	IXY DIGITAL	PowerShot A/S
Item	Li-Ion	Li-Ion	Ni-MH
Voltage/Capacity	7.4V/1100mAh	3.7V/680mAh	6.0V/650mAh
Volume	Approx.43.9cm^3	Approx. 17.1cm^3	——
Weight	Approx.70g	Approx. 29g	Approx. 70g

Table 2-6 Battery comparison

[System Accessories]

-Wide converter lens, tele-converter lens, close-up lens

To meet diverse user needs, a full line-up of optical accessories is available for the PowerShot G1. The Wide Converter WE-DC58 converts the focal length by about 0.8x and the total focal length of 28mm at the wide-angle end in 35mm film format. Tele-converter TC-DC58 converts the focal length by 1.5x and the total focal length of 153mm at the telephoto end in 35mm film format. And Close-up lens 250D enables shooting as close as 12 cm (from the front of the lens) at the telephoto end in macro mode. The resulting shooting area is 50X38mm. However, there are a few restrictions when using these accessories and a flash together, as shown in Table 2-7. And there is possiblity of vignette when you use the optical finder despite attaching these conversion lenses to the cameras. Also, there is a possiblity of vignette when you take a picture other than wide angle end with Wide Conversion Lens and tele-photo end with Tele-conversion lens.

	Built-in	External
WC-DC58 (Wide angle end)	Vignette	Auto flash*
TC-DC58 (Telephoto end)	Vignette	Auto flash*
250D 58mm (Telephoto end)	Vignette	Auto flash*

*There is a possibility of full-flash.

Table 2-7 Relation between each accessories and flash

Note: The Conversion Lens Adapter LA-DC58 (sold separately) is required to attach the WC-DC58, TC-DC58, or 250D 58mm to the camera.

-Compatible with EX-series Speedlites mode for EOS cameras

With its high pixel count and many features, the PowerShot G1 will likely to be used by advanced amateurs and pro users for creative shooting. Although it has a built-in flash, its maximum range is only 3.6 meters (ISO 100 equivalent) for telephoto shooting. This is inadequate for these users.

A hot shoe for external Speedlites (220EX, 380EX, 420EX, 550EX) has therefore been provided on the camera. An external Speedlite enables autoflash control.

Note: The flash will fire at full strength in Manual mode. The flash without above models will fire at full strength.

<Available Flash Features>

-Auto flash (550EX must be set to E-TTL mode.) -FE lock (except for Manual mode)

-Fill flash -Slow sync speed

-Flash exposure compensation (When using the 550EX, the LCD panel's flash range scale value will not appear correctly. Besides, you must execute flash exposure compensation with the camera when using the 550EX.)

-Autozoom (except for 220EX)

<Maximum sync speed>

-Speedlites (220EX, 380EX, 420EX, 550EX) : 1/250 sec.

-others : 1/125 sec.

-New power source

The PowerShot G1 uses a rechargeable lithium-ion battery (BP-511). Also, with Compact Power Adapter CA-560 (provided), the camera can be powered by a household power outlet. And with the Charge Adapter/Car Battery Cable Kit CR-560 (sold separately), the camera can be powered by a car battery in case you run out of battery power on the road.

The BP-511 can be charged in the camera body by using the Compact Power Adapter CA-560. This eliminates the need to remove the battery from the camera body.

The PowerShot G1's internal battery is rechargeable. As shown in Fig. 2-9, you can use Compact Power Adapter CA or Charge Adapter/Car Battery Cable Kit CR-560 to recharge the battery. Use whichever method that suits your situation.

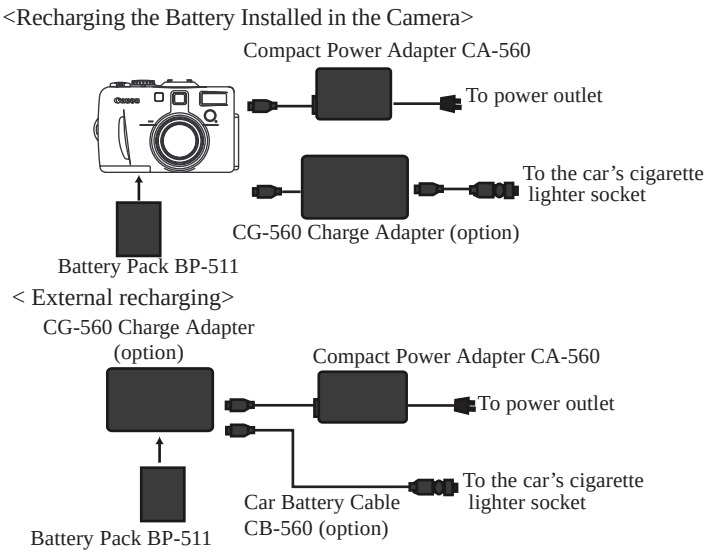


Fig. 2-9 Battery recharging system.

[Application Software]

-ZoomBrowser EX 2.4/ImageBrowser 1.4 featuring improved operation ease.

The ZoomBrowser EX (Windows)/ImageBrowser (Mac) programs were well received with the PowerShot S-series and improved with the IXY DIGITAL. The programs are now bundled with the PK500 and PowerShot G1.

ZoomBrowser EX 2.4 is for simple retouching such as color and brightness adjustments and cropping. It also enables slide show playback on a PC, supports e-mail and DPOF editing. By supporting e-mail, the program can set the image size and compression ratio and create the image according to the required file size. The mailer program starts up automatically, and the image is attached to a new e-mail message automatically. In case the mailer program is not started up automatically, the image is saved after being resized and it can be attached to e-mail manually.

Like ZoomBrowser EX, ImageBrowser 1.4 also enables simple retouching and slide show playback on a PC, supports e-mail and editing DPOF editing. The printing feature has been expanded to enable you to set the desired number of copies to be printed, change the printing sequence of the images, resize or rotate images, and insert text in the image.

* ImageBrowser does not enable automatic attachment of an image to e-mail. It must be done manually.

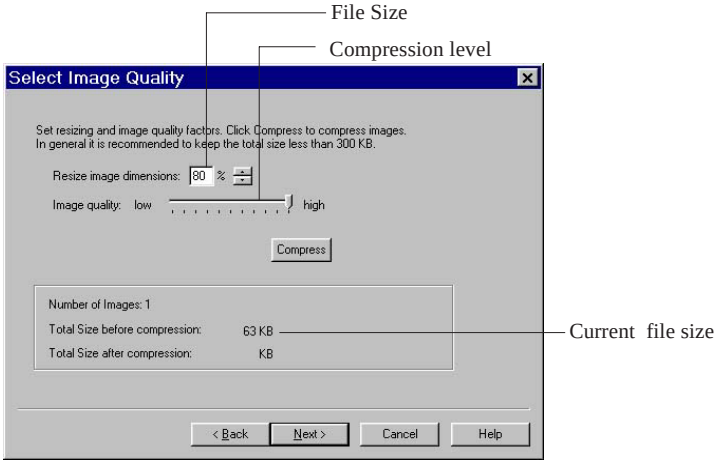


Fig. 2-10 File size/compression level settings

-Photorecord 1.2 for easy layout and printing of many pictures.

PhotoRecord 2.1 (for Windows only) enables text to be inserted anywhere in the image. You can also select the text frame and easily layout and print out image. And using the PhotoRecord 1.2 together with the new Extension DDI driver, designed for the new BJ printer due out, allows for the automatic layout of a user's images on borderless, perforated paper* (paper due out at same time as Extension DDI). The user can then easily print out photo-quality borderless prints with the new BJ printer.

*Glossy Photo Card 4"x 6" and Photo Card Pro 4"x 6" (101.6 x 152.4mm). In Japan, L size, 2L size, DSC size, 8"x 10" size for digital cameras and Glossy Photo Card 4"x 6" are also for sale.

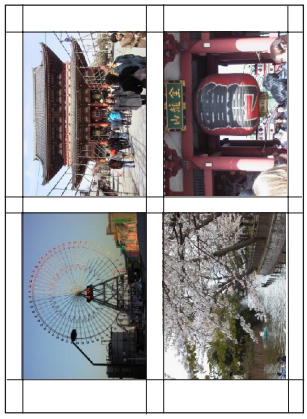


Fig. 2-11 Automatic layout on borderless, perforated paper

-PhotoStitch 3.1 for creating panoramic pictures.

PhotoStitch 3.1 automatically obtains the property information (composition orientation, image sequence, focal length information, camera model name) of pictures taken in the stitch assist mode. Also, cylindrical imaging (for pasting on a cylinder) or flat imaging (for pasting on a flat surface) can be selected to easily create high-precision panoramic pictures with minimal distortion. The picture can also be saved in the QuickTime VR format.

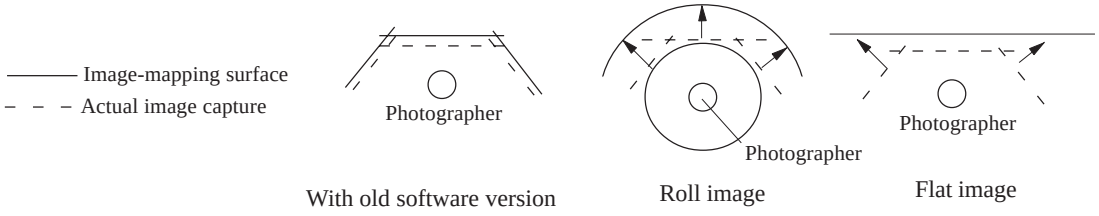


Fig. 2-12 Image mapping methods.

-RemoteCapture 1.1 for remote picture-taking with a PC.

The PowerShot G1 is bundled with the newly developed "RemoteCapture (USB only)" software. This software enables the camera to be remote controlled by a PC. The following remote control operations are possible with a PC:

-Shutter release (single-frame, interval and test shooting only)
-Lens zooming (excluding electronic zooming)
-Confirming various camera parameters
-Setting White balance, resolution/JPEG compression, macro, flash and exposure compensation
-Setting recording to CF or not

In the PC mode, transferring and deleting image data are possible. In the remote control mode, you can execute picture-taking functions. In the remote control mode, you can also use the functions available in the PC mode.

-RS-232C TWAIN Driver 3.4/USB TWAIN Driver 3.4/Plug-in Module 3.4/ZoomBrowser EX 2.4/ImageBrowser 1.4 for adjusting image quality parameters.

The PowerShot G1 provides the RAW mode to enable white balance, contrast, sharpness, and color saturation adjustments with the RS-232C TWAIN Driver 3.4/USB TWAIN Driver 3.4/Plug-in Module 3.4/ZoomBrowser EX 2.4/ImageBrowser 1.4. The previewer enables you to preview the image retouching you make. For example, the selected Contrast setting (Normal, High, Low) is reflected in the previewer.

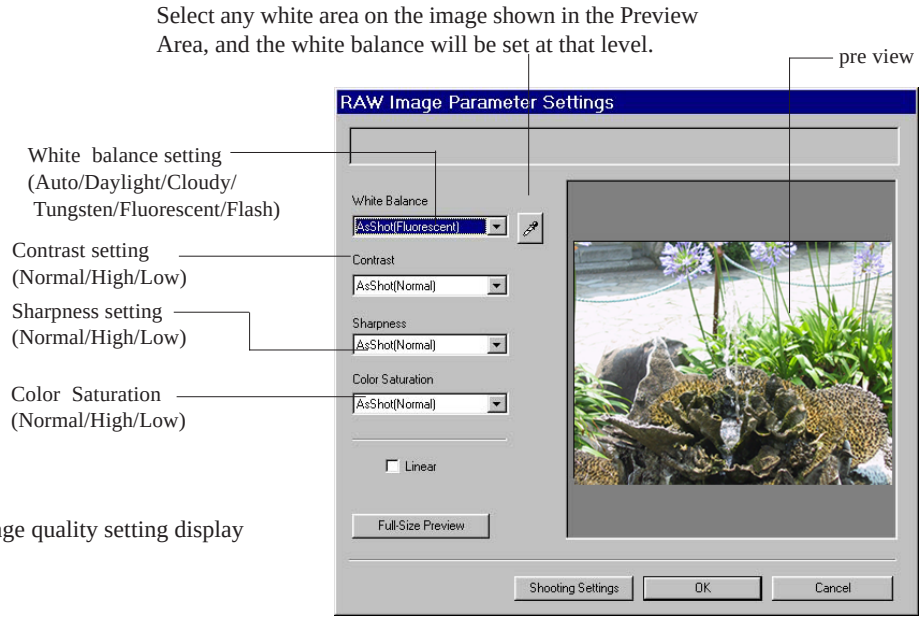


Fig. 2-13 RAW image quality setting display

-Reputable third-party applications

<Adobe Photoshop LE 5.0>

Enables image editing and image preparation for the Web or printing.

<Apple QuickTime 4.1>

Standard multimedia tool that can playback movies, sound, still images, etc. It can playback the movie clips and sound recorded by the PowerShot G1. Files can also be saved in the QuickTime VR format.

2-2 Design Concept

High-resolution lens and T-shape to emphasize reliability

New user interface for easy operation of many features and creating images

-Two integrated Mode dials

-Large, vari-angle LCD monitor for shooting at various angles

-Display panel with an easy-to-read layout

3. Exterior

3-1 External Photos

Main Accessories

Wide Converter
WC-DC58

Tele Converter
TC-DC58

Close-up Lens
250D 58mm

Conversion Lens Adapter
LA-DC58

Battery Pack BP-511

Compact Power Adapter CA-560
*The power code is Japanese model.

Charge Adapter CG-560

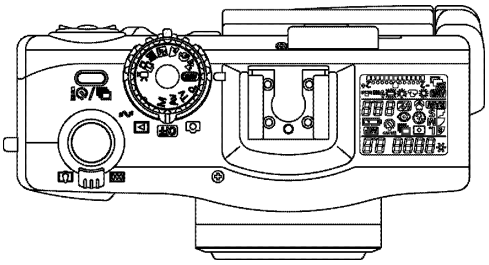
Car Battery Cable CB-560

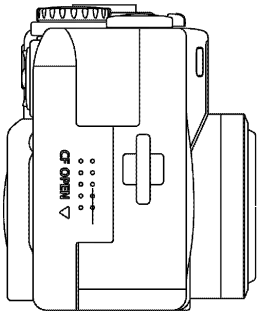
Soft Case SC-PS400

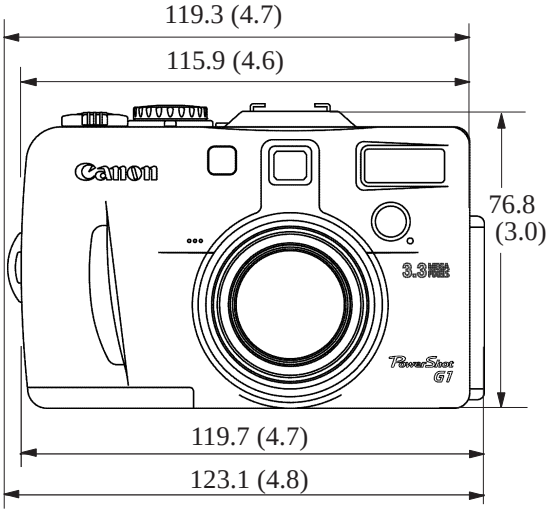
A/V Cable AVC-DC100

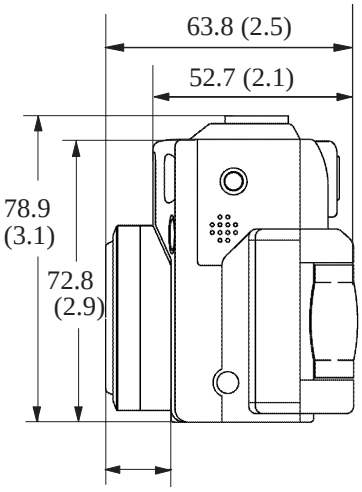
Wireless Controller
WL-DC100

3-2 6-dimensional Views

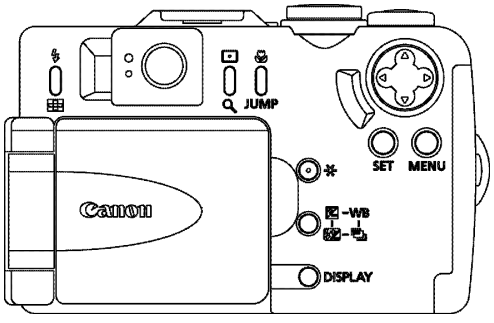


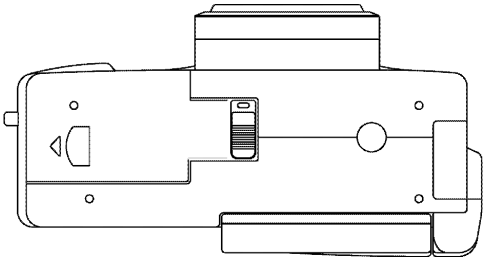






Wide side : 39.3 (1.5)
Tele side : 39.53 (1.56)
Middle : 34.7 (1.4)

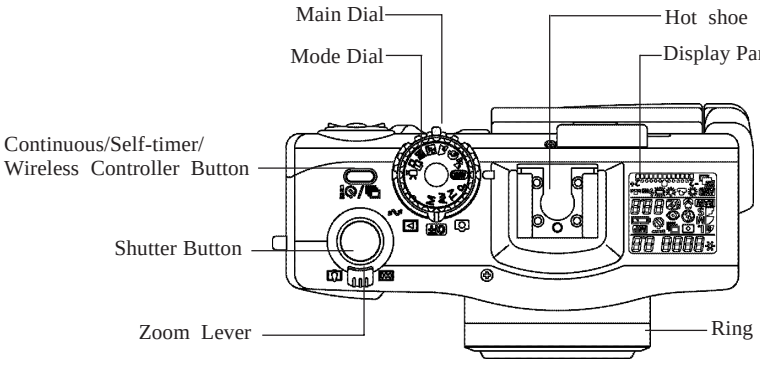


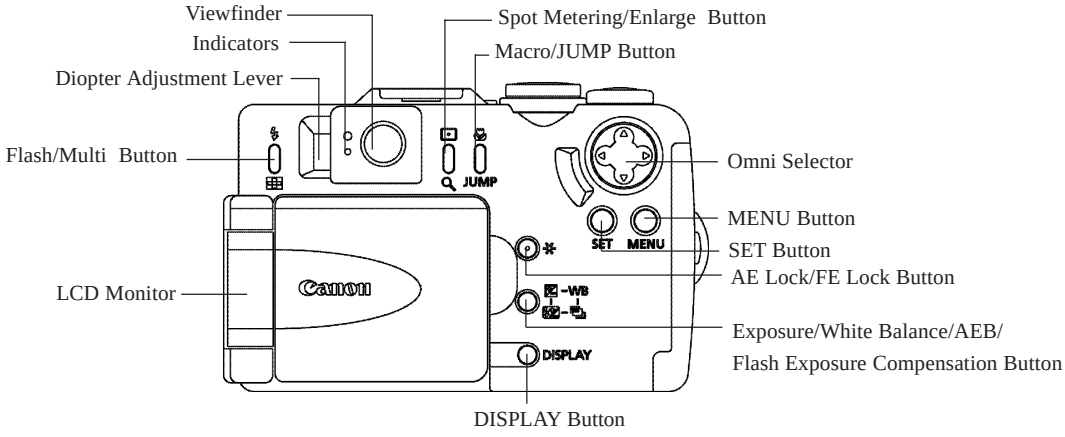


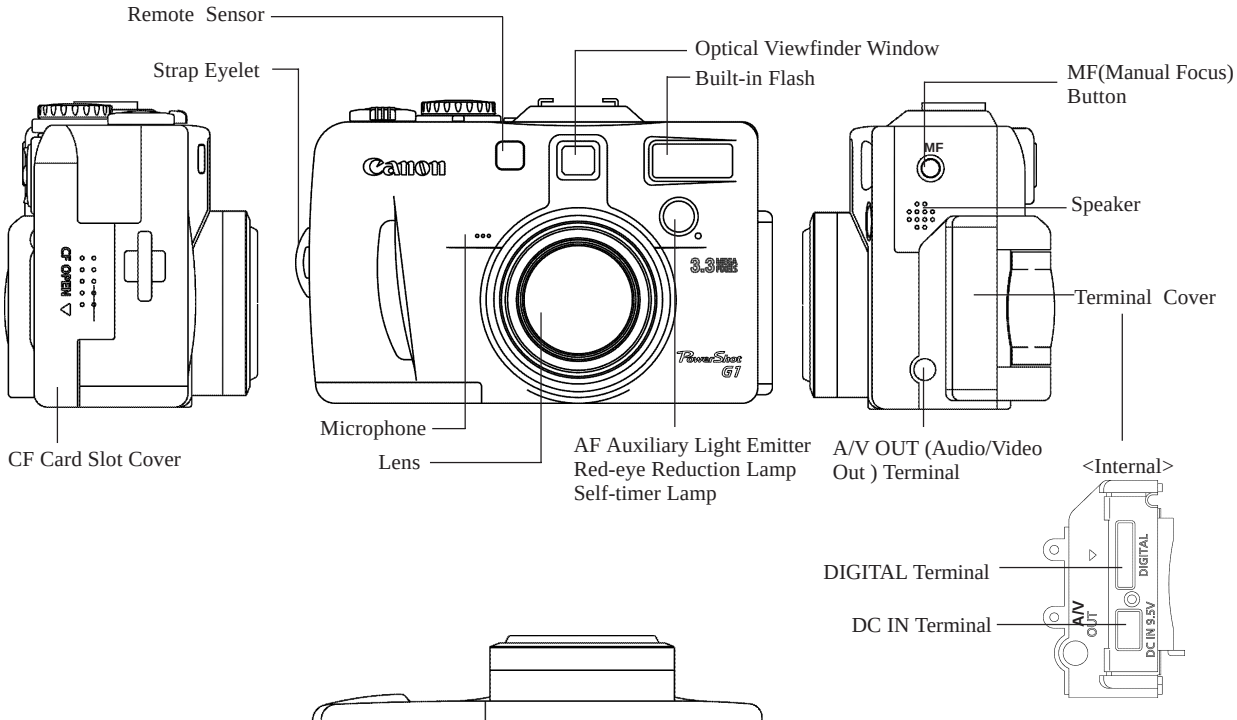
Unit : mm (in.)

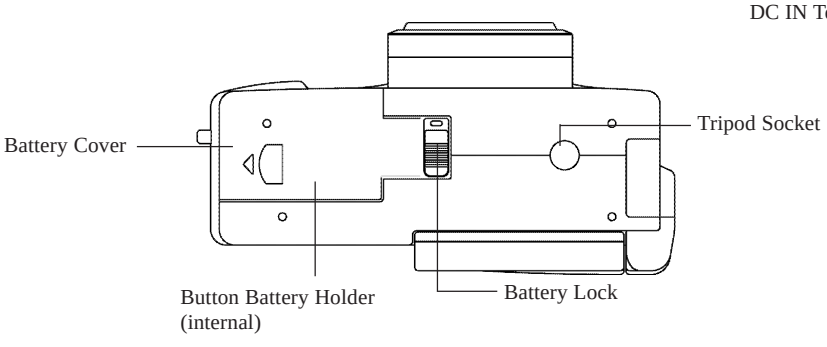
*This figure is prototype.

3-3 Nomenclature and Functions

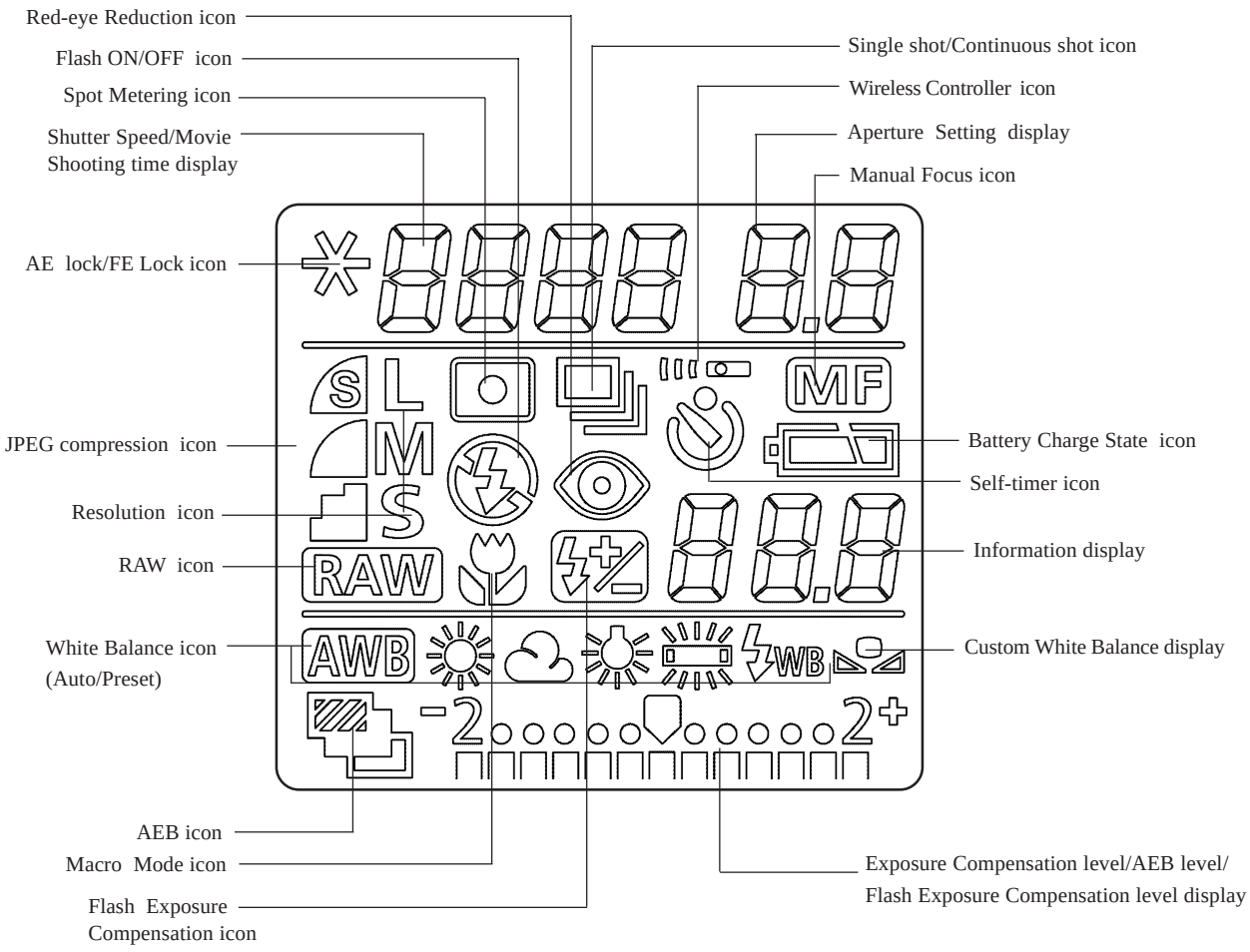








● Display Panel



-Red-Eye Reduction icon
Displayed when red-eye reduction is set.
-Flash On/Off icon
Auto : No icon is displayed.
OFF : The flash-OFF icon is displayed.
ON : The flash-ON icon is displayed.
-Spot Metering icon
Displayed when spot metering is set.
-Shutter Speed/Movie Shooting time display
(Indicates the remaining/passing time of Movie.)
-AE lock/FE lock icon
-JPEG compression icons
(Super Fine/Fine/Normal)
-Resolution icons (Large/Middle/Small)
-RAW icon
-White Balance mode icon
Displays the selected white balance mode.
-AEB icon
Displayed when AEB is set.
-Macro mode icon
Displayed when the macro feature is set.
-Flash Exposure Compensation icon
Displayed when flash exposure compensation is set.

-Single Shot/Continuous Shot icon
During single shooting, the top icon (□) is displayed.
During continuous shooting, the entire icon is displayed.
-Wireless Controller icon
-Aperture Setting display
-Manual Focus icon
Displayed when Manual Focus is set.
-Battery Cahrge State icon
Displayed all when the battery level is normal.
Blinks for low battery level.
Blinks when the camera cannot operate and "*Lb*"
is also displayed at Information Display area.
-Self-Timer mode icon
Displayed when the self-timer is set.
The single shooting icon is also displayed.
-Information display (three-digit)
Indicates the remaining number of exposures.
Indicates any errors (when no CF card is inserted
or when the card has an error).
Indicates battery level (when the batteries are exhausted
and the camera cannot operate).
Indicates a PC connection.
-Custom White Balance icon
Displayed when custom white balance is set.
-Exposure Compensation level/AEB level/
Flash Exposure Compensation level display

4. System

4-1 Product Diagram

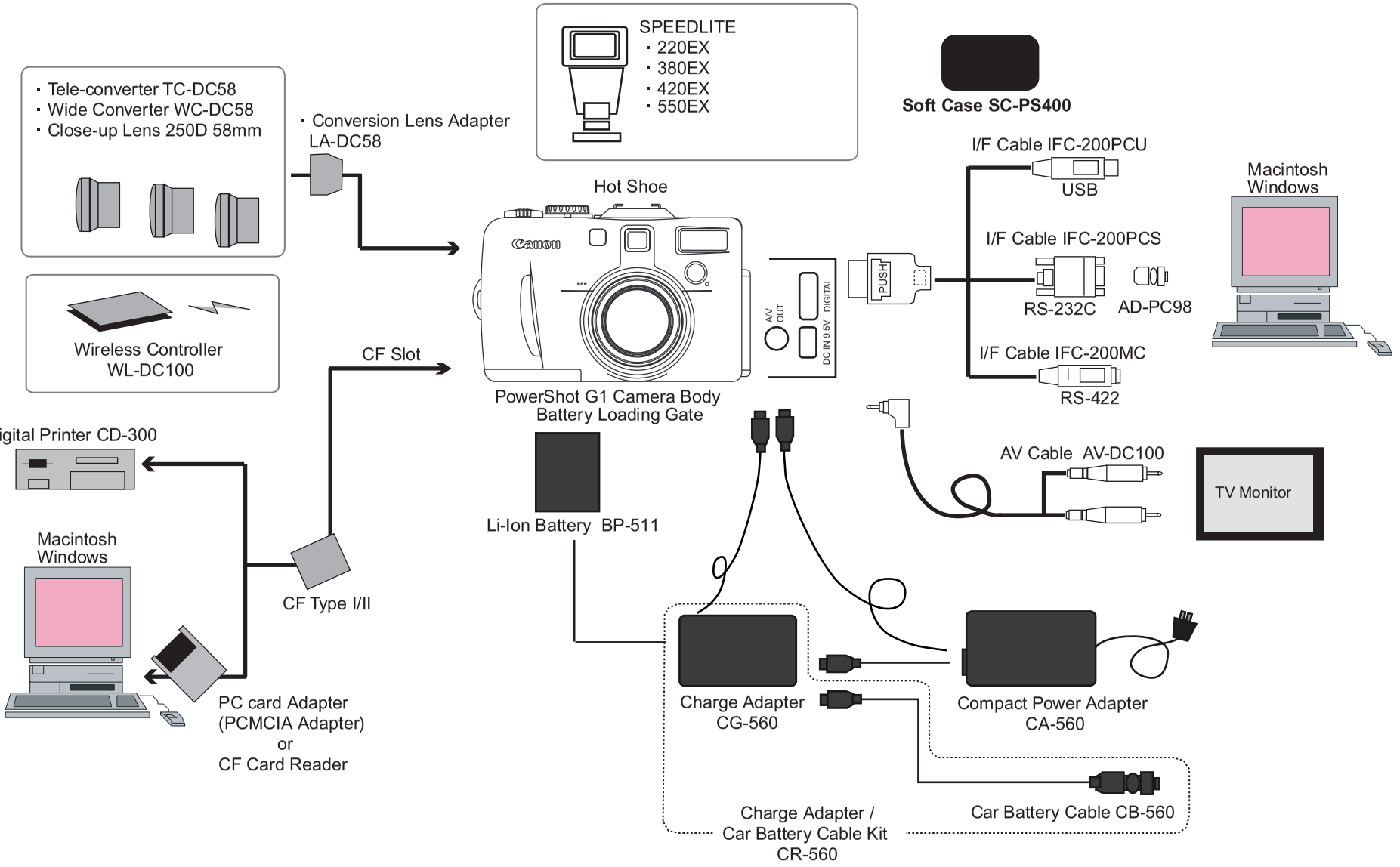
	Item		No.	
Japan	PowerShot G1	PowerShot G1 Body	-	New
		Lens Cap	-	New
		Neck Strap	NS-DC100	New
		Wireless Controller	WL-DC100	New
		Lithium Battery (for Wireless Controller)	CR-2025	G
		Battery Pack	BP-511	○
		Compact Power Adapter	CA-560	○
		AC Cable (J)	-	○
		AV Cable	AVC-DC100	New
		CompactFlash Card	FC-16M	Current
		Case for CompactFlash Card	-	Current
	PC INTERFACE KIT PK500	Interface Cable (for USB)	IFC-200PCU	△
		CD-ROM (Driver, application soft)*1	-	New
	Interface Adapter for PC-98 Series	Interface Adapter for PC-98 Series	AD-PC98	△
North America/Canada/Taiwan	PowerShot G1	PowerShot G1 Body	-	New
		Lens Cap	-	New
		Neck Strap	NS-DC100	New
		Wireless Controller	WL-DC100	New
		Lithium Batter (for Wireless Controlle)	CR-2025	G
		Battery Pack	BP-511	○
		Compact Power Adapter	CA-560	○
		AC Cable (N)	-	○
		AV Cable	AVC-DC100	New
		Interface Cable (for USB)	IFC-200PCU	△
		CD-ROM (Driver, application soft)*1	-	New
		CompactFlash Card	FC-16M	Current
		Case for CompactFlash Card	-	Current
Europe	PowerShot G1	PowerShot G1 Body	-	New
		Lens Cap	-	New
		Neck Strap	NS-DC100	New
		Wireless Controller	WL-DC100	New
		Lithium Batter (for Wireless Controlle)	CR-2025	G
		Battery Pack	BP-511	○
		Compact Power Adapter	CA-560	○
		AC Cable (E)	-	○
		AV Cable	AVC-DC100	New
		Interface Cable (for USB)	IFC-200PCU	△
		CompactFlash Card	FC-16M	Current
		Case for CompactFlash Card	-	Current
OTH	PowerShot G1	PowerShot G1 Body	-	New
		Lens Cap	-	New
		Neck Strap	NS-DC100	New
		Wireless Controller	WL-DC100	New
		Lithium Batter (for Wireless Controlle)	CR-2025	G
		Battery Pack	BP-511	○
		Compact Power Adapter	CA-560	○
		AC Cable (E, B, AS)	-	○
		AV Cable	AVC-DC100	New
		Interface Cable (for USB)	IFC-200PCU	△
		CD-ROM (Driver, application soft)*1	-	New
		CompactFlash Card	FC-16M	Current
		Case for CompactFlash Card	-	Current
All Destinations	Battery Pack	Battery Pack	BP-511	○
		Terminal Cover	-	○
	Charge Adapter/Car Battery Cable Kit CR-560	Charge Adapter	CG-560	○
		Car Battery Cable	CB-560	○
		DC Cable	-	○
	Compact Power Adapter	Compact Power Adapter	CA-560	○
	Wide Converter	Wide Converter	WC-DC58	New
		Lens Cap/Lens Dust Cap/Soft Case	-	New
	Tele-converter	Tele-converter	TC-DC58	New
		Lens Cap/Lens Dust Cap/Soft Case	-	New
	Close-up Lens	Close-up Lens	250D 58mm	◇
	Conversion Lens Adapter	Conversion Lens Adapter	LA-DC58	New
	Wireless Controller	Wireless Controller	WL-DC100	New
		Lithium Batter (for Wireless Controlle)	CR-2025	G
	Soft Case	Soft Case	SC-PS400	New
	Interface Cable	Interface Cable (for USB)	IFC-200PCU	△
	Interface Cable	Interface Cable (for Serial)	IFC-200PCS	△
	Interface Cable	Interface Cable (for Mac)	IFC-200MC	△
	AV Cable	AV Cable	AVC-DC100	New

○ Also used for Digital camcorder group's products △ Alsp used for PowerShot S series
◇ Also used for Film camera group's products G General purpose

·Name of software

Windows	Macintosh
Canon Utilities ZoomBrowser EX 2.4 (PhotoRecord 1.2	Canon Utilities ImageBrowser 1.4
Canon Utilities PhotoStitch 3.1	Canon Utilities PhotoStitch 3.1
Canon Utilities RemoteCapture 1.1	Canon Utilities RemoteCapture 1.1
Canon Digital Camera RS-232C TWAIN Driver 3.4	Canon Digital Camera Plug-In module 3.4
Canon Digital Camera USB TWAIN Driver 3.4	Adobe Photoshop 5.0 LE
Adobe Photoshop 5.0 LE	Apple QuickTime 4.1
Apple QuickTime 4.1	

Table 4-1 Product Chart (excluding printed matter)


SPEEDLITE
・220EX
・380EX
・420EX
・550EX
Soft Case SC-PS400
・Tele-converter TC-DC58
・Wide Converter WC-DC58
・Close-up Lens 250D 58mm
・Conversion Lens Adapter
LA-DC58
Hot Shoe
I/F Cable IFC-200PCU
USB
Macintosh
Windows
I/F Cable IFC-200PCS
RS-232C
AD-PC98
Wireless Controller
WL-DC100
CF Slot
PUSH
A/V OUT
DC IN 9.5V DIGITAL
PowerShot G1 Camera Body
Battery Loading Gate
I/F Cable IFC-200MC
RS-422
Digital Printer CD-300
AV Cable AV-DC100
TV Monitor
Li-Ion Battery BP-511
Macintosh
Windows
CF Type I/II
PC card Adapter
(PCMCIA Adapter)
or
CF Card Reader
Charge Adapter
CG-560
Compact Power Adapter
CA-560
Car Battery Cable CB-560
Charge Adapter /
Car Battery Cable Kit
CR-560

5. Specifications

5-1 Specifications

<CCD>	
-Reading format	Interline
-Chip size	8.10 (H) X 6.64 (V) mm (0.3 X 0.2 in.) equivalent to 1/1.8-inch
-Total pixels	Approx. 3.34 million (2,140 (H) X 1,560 (V))
-Effective pixels	Approx. 3.24 million (2,088 (H) X 1,550 (V))
<Lens>	
-Focal length	7 (W) - 21 (T) mm (34 (W) - 102(T) mm 35mm film equivalent)
-f/number	2.0 (W) - 2.5 (T)
-Focusing range	Normal AF : 70 cm (2.3 ft.) -infinity
(Measured from top of lens Macro barrel)	AF : 6 (0.2 ft.) (W)/20 (0.7 ft.) (T) - 70 cm (2.3 ft.) Manual Focus : 6 (0.2 ft.) (W)/20 (0.7 ft.) (T) - infinity
-Lens construction	7 groups 8 pieces
<Optical viewfinder>	
-Type	Real-image optical zoom viewfinder
-Magnification	0.31 (W) - 0.93 (T)
-Coverage	Vertical : 84% Horizontal : 84% (When object is 3m away.) -3.0-+1.0 dpt.
<LCD viewfinder>	
-Type	Low-temperature polycrystalline silicon TFT color LCD
-Pixels	113.578 dot (521 (H) X 218 (V))
-Display size	46 mm diagonal (1.8inch)
-Coverage	97%
<Focusing>	
-Control system	TTL Autofuocus (Continuous/Single) AF lock and Manual focus are available.
-Focusing points	1 focusing point
<Exposure control>	
-Light Metering method	Center-weighted averaging/Spot
-Exposure method	Program AE/Shutter speed-priority AE/Aperture-priority AE/Manual AE Lock is available.
-Exposure compensation	+/-2.0EV (at every 1/3-stop) Auto Exposure Bracketing (AEB) is available.
<White balance>	
-Mode	TTL auto white balance, pre-set white balance (available settings : Daylight, Cloudy, Tungsten, Fluorescent or Flash) or Custom white balance
<Aperture and shutter>	
-Shutter type	Mechanical shutter and electronic shutter
-Aperture range	W : F2.0 - F8.0/T : F2.5 - F8.0
-Shutter speed	8 - 1/1,000 sec. (8 sec. shutter is available in Shutter speed-priority AE or Manual mode.) (Aperture value is fixed to F8 if users set the shutter speed from 1/640 to 1/1,000 sec. in Shutter speed-priority AE or Manual mode.) (Shutter speed from 1/640 to 1/1,000 sec. is not available, if users set aperture value except for F8 in Aperture-priority mode or Manual mode.) Slow shutter of 1.3 sec. and more operates with noise reduction.

<Flash (Built-in)>

-Operation modes	Auto, Red-eye reduction auto, Red-eye reduction ON, ON or OFF
-Flash range	0.7 - 4.5 m (W)/0.7 - 3.6 m (T) (When sensitivity is set to ISO100 equivalent)
-Recycling time	10 sec. or shorter (full flash, battery voltage=7.4 V)
-Flash exposure compensation	+/- 2.0EV (at every 1/3-stop)

<Flash (External)>

-Flash contacts	Sync-terminals at accessory shoe
-Compatibility	Canon SPEEDLITE 220EX, 380EX, 420EX, 550EX
-Flash exposure compensation	+/- 2.0EV (at every 1/3-stop)

<Shooting/Recording specifications>

-Shooting modes	Auto/Creative zone(Program, Shutter priority, Aperture priority and Manual)/ Programmed Image Control zone(Pan-focus, Portrait, Landscape, Night scene, Black & White, Stitch assist and Movie)
-Continuous shooting	Approx. 1.7 images/sec. (at Large/Fine mode and LCD viewfinder is OFF)
-Movie	Approx. 15 frames/sec., up to approx. 30 sec./shot
-Self timer	Operates with approx. 10 seconds countdown.
-Wireless control	Shooting and playback are available (Wireless controller is included in the camera kit). When shooting, image is captured 2 seconds after shutter release operation.
-Sensitivity (Equivalent film speed)	Auto, ISO50, ISO100, ISO200 and ISO400 equivalent (At Auto setting, camera auto matically adjusts sensitivity in the range of from ISO50 to ISO100 equivalent.)
-Digital tele-converter	2X/4X (Maximum 12X digital zoom is available when combined with optical zoom.)
-Release time lag	Approx. 0.07sec.
-Shooting interval	Approx. 1.8sec.
-JPEG compression mode	Super Fine, Fine or Normal
-Number of recording pixels	Still image : Large: 2,048 X 1,536/Middle : 1,024 X 768/Small : 640 X 480 Movie : 320 X 240
-File format	Design rule for Camera File system (DCF*) * "DCF" is an abbreviation of "Design rule for Camera File system" standardized by Japan Electronic Industry Development Association (JEIDA).
-Print order format	Digital Print Order Format (DPOF) Version 1.0
-Image recording format	Still image: JPEG or RAW Movie: AVI (Image data: Motion JPEG, Audio data: WAVE [monaural])
-Storage media	CompactFlash™ (CF) card (Type I or Type II)
-Storage capacity	***Above-written figures are measured under Canon's standard conditions and may vary depending on the scene, subjects or camera settings.***

	Small/N	Small/F	Small/SF	Middle/N	Middle/F	Middle/SF	Large/N	Large/F	Large/SF	RAW	Movie
File Size	88KB	156KB	273KB	174KB	329KB	591KB	468KB	943KB	1,722KB	2,469KB	—
FC-8M	79	46	26	41	22	12	15	7	3	2	30 sec.
FC-16M	161	94	54	84	45	25	32	15	8	5	62 sec
FC-30M	325	190	110	171	92	51	65	32	17	11	125 sec.
FC-32M	323	189	109	170	91	51	64	32	17	11	124 sec
FC-64M	648	379	220	342	183	103	130	64	35	24	250 sec
FC-128M	1298	760	441	684	368	207	261	130	71	49	502 sec
340MB (Microdrive)	3639	2079	1212	1898	1015	581	727	366	200	140	1408 sec.

*For movies, time figures are displayed as if the movies were shot continuously.

-Tone reproduction	8 bits X 3 colors (10-bit signal processing)

<Playback specifications>

-Playback modes	Single, Multi (9 thumbnail images), Magnification or Slide show
-Magnify	Approx. 2.5X or 5X on built-in LCD monitor
-Vertical and horizontal conversion	Vertical and horizontal conversion can be set on each image. (Both LCD and Video Out play an image according to setting.)

<Erasing specifications>

-Erasing modes	Single image, all images (When "All images" is set, any images in the CF card captured with another camera or peripheral device (DCF format) are erased. Regarding Canon digital cameras, images taken by the PowerShot 600/600N, the PowerShot 350, Power Shot A5, PowerShot A5 Zoom, PowerShot Pro70 will not be erased but those taken by PowerShot A50 (DCF only), PowerShot S10, PowerShot S20, IXY DIGITAL, Power Shot Pro90 IS and EOS D30 (DCF format) will be erased.) *Protected images are not erased.

<Interface>

-Computer I/F	Universal Serial Bus (USB), RS-232C/RS-422,
-A/V out	Video : NTSC or PAL selectable Audio : monaural Cable type : L-type plug (3.5mm dia.)

<Display specifications>

-LED (Upper LED)	-Lights in green : Indicates that the camera is ready with flash off. Charging battery completed (full charge) -Blinks in green : Recording to CF card/Reading CF card/Erasing data on CF card -Lights in orange : Indicates that the camera and flash are ready. Charging battery completed (adequate charge for use)
-LED (Lower LED)	-Blinks in orange : Indicates that the camera is ready (camera shake warning)/during charging battery -Lights in yellow : SW1 ON in macro shooting/manual focus shooting

<Power Supply>

-Power sources	Rechargeable Lithium-ion battery (type: BP-511), AC adapter (type: CA-560), Car battery adapter (type: CR-560) (option)
-Power current consumption	During shooting with LCD OFF : Approx. 130mA (excluding rush current) (Battery voltage = 7.4 V) with LCD ON : Approx. 700mA (excluding rush current) (Battery voltage = 7.4 V) During playback with LCD : Approx. 500mA (excluding rush current) (Battery voltage = 7.4 V)

-Shooting capacity	LCD ON BP-511 : Approx. 260 images LCD OFF BP-511 : Approx. 800 images Canon's standard conditions of measuring shooting capacity are as follows: Normal temperature (23 Celsius degrees). LCD viewfinder is ON. Shoot images at wide angle end and at telephoto end alternately with 20 seconds intervals. Use flash at every 4-time shootings. Turn camera off and on at every 8-time shootings.
-Playback time	BP-511: Approx. 160 min. Canon's standard conditions of measuring playback time are as follows: Normal temperature (23 Celsius degrees). Repeat playback automatically at a speed of 1 image per 5 seconds.
-Charging time	Installed in the camera : Approx. 80 min (Adequate charge for use: Approx. 90%) Full charge (100%) requires another approx. 2 hours.

<Camera specifications>

-Operating temperature	0 - 40 C (32 - 104 F)
-Operating humidity	10 - 90%
-Dimensions (WxHxD)	119.7 X 76.8 X 63.8 mm (4.7 X 3.0 X 2.5 in.) (excluding protrusion)
-Weight	Approx. 420 g (14.8 oz) (excluding batteries and CF card)

[Parameter availability by modes]

Shooting mode		AE+/-		AEB		EF+/-		WB		Flash						Drive			Macro		Size			Quality			RAW	AVI	Digital zoom	
		0	else	0	else	0	else	Auto	else	Red-eye Auto	Auto	Red-eye ON	ON	OFF	Ext	Single	Cont.	Self	Off	On	L	M	S	SF	F	N			OFF	ON
Green	Auto	D	X	D	X	D	X	D	X	d	O	X	X	O	O	D	X	O	D	O	D	O	O	O	D	O	X	X		
Creative	P																													
	Tv	d	O	d	O	d	O	d	O	X	X	O	O	d	O	D	O	O	D	O	d	O	O	O	d	O	O	X		
	Av																													
	Manual	D	X	D	X	D	X																							
Image	Landscape									O	O	O	O	D	O				D	X									D	O
	Night scene									D	O	O	O	O	O				D	X										
	Portrait	D	O	X	X	D	O	D	O	D	O	O	O	O	O	D	O	O	D	O	d	O	O	O	d	O	X	X		
	Pan-focus									O	D	O	O	O	O				D	X										
	B&W							X	X	O	D	O	O	O	O				D	O										
	StitchAssist	D	△	D	X	D	△	D	△	X	X	X	△	D	X	D	X	O	D	O	d	△	△	O	d	O	X	X	D	X
	Movie	D	O	D	X	X	X	D	O	X	X	X	X	X	X	D	X	O	D	O	X	X	X	X	X	X	X	D	D	X

Shooting mode		Contrast			Saturation			Sharpness			Sensitivity					Metering mode		AF		Focus		AE lock		Av/Tv	
		-	0	+	-	0	+	-	0	+	Auto	50	100	200	400	Normal	Spot	Cont	One	AF	MF	Off	On	Av	Tv
Green	Auto	X	D	X	X	D	X	X	D	X	D	X	X	X	X	D	X			D	X	D	X	X	X
Creative	P																					D	O	X	X
	Tv	O	d	O	O	d	O	O	d	O	O	d	O	O	O	D	O			D	O	D	O	X	O
	Av																					D	O	O	X
	Manual										X							d	O			D	X	O	O
Image	Landscape	X	best	X	X	best	X	X	best	X	best	X	X	X	X	best	X			D	O	D	X		
	Night scene	X	best	X	X	best	X	X	best	X	best	X	X	X	X	best	X			D	O	D	X		
	Portrait	X	best	X	X	best	X	X	best	X	best	X	X	X	X	best	X			D	O	D	X	X	X
	Pan-focus	X	best	X	X	best	X	X	best	X	best	X	X	X	X	best	X	X	X	X	X	X	X		
	B&W	X	best	X	X	best	X	X	best	X	D	X	X	X	X	best	X	d	O	D	O	D	X		
	StitchAssist	X	best	X	X	best	X	X	best	X	D	X	X	X	X	best	X			D	O	D	X		
	Movie	X	best	X	X	best	X	X	best	X	D	X	X	X	X	best	X	D	X	D	O	D	X	X	X

D : Default (set to switch the modes) d : factory preset O : Selectable

△: The parameter is changeable at first shot is in StitchAssist mode X : Unselectable

□ memorized in case of shut down

[Replay compatibility]

The following table shows the replay compatibility of images shot by PowerShot series cameras. The PowerShot G1 supports up to 3,200(H) x 2,400(V) pixels as its main image resolution.

			Model name (Replay)								
			PS 350	PS A5/A5 Zoom	PS Pro70	PS A50	PS S10/S20	DIGITAL IXUS PS S100	PS G1	PS Pro90 IS	EOS D30
Model Name (Capture)	PS 350	CIFF	O	O	O	O	O	X	X	X	X
	PS A5/A5 Zoom	CIFF	△	O*1	O*1	O*1	O*1	X	X	X	X
	PS Pro70	CIFF	△	O*2	O*1	O*1	O*1	X	X	X	X
	PS A50	CIFF	△	O*2	O*1	O*1	O*1	X	X	X	X
		DCF	X	X	X	O*1	O*1	O*1	O*1	O*1	O*1
	PS S10/S20	DCF	X	X	X	O*3	O	O	O	O	O
	IXY DIGITAL	DCF	X	X	X	O*3	O	O	O	O	O
	PS G1	DCF	X	X	X	O*3 *1	O*4 *1	O*4 *1	O	O	O
	PS Pro90 IS	DCF	X	X	X	O*3 *1	O*4 *1	O*4 *1	O	O	O
	EOS D30	DCF	X	X	X	O*3 *1	O*4 *1	O*4 *1	O	O	O
	DCF model from other companies	DCF	X	X	X	O*3	O*4	O*4	O*4	O*4	O*4

O : Replayable

△ : Replay of images in RAW mode not possible

X : Not replayable

*1 : Thumbnail display of RAW mode images

*2 : Thumbnail display of RAW mode images
JPEG file replay up to 1,024 x 768 pixels

*3 : Only JPEG file replay
Replayable up to 1,632 x 1,232 pixels. Thumbnail display (160 x 120) of images exceeding that size.
"Image too large" message displayed when too big.

*4 : Only JPEG file replay
Replayable up to 3,200 x 2,400 pixels. Thumbnail display (160 x 120) of images exceeding that size.
"Image too large" message displayed when too big.

Since the PowerShot G1/Pro90 IS's RAW has an internal JPEG file for playback, a full-screen image is displayed.
However, if the RAW from the PowerShot A50 and older models is played back with the PowerShot G1/Pro90 IS, thumbnails will be displayed.

5-2 System requirements (Canon Digital Camera Solution Disk 2.0 is required for installing software)

[Microsoft Windows®95, Windows®98, WindowsNT® 4.0 and Windows® 2000]

-Computer Model	IBM PC/AT or compatible	
-OS	Microsoft Windows® 95, Windows® 98 (including Second Edition), Windows® Me, Windows NT® 4.0 (Service Pack 3 or higher) and Windows® 2000	
-CPU	Pentium 133MHz or better. (Windows Me : Pentium 150 MHz or better)	
-RAM	32MB RAM minimum for Windows 95 and Windows 98. 64MB RAM minimum for Windows Me, Windows NT 4.0 and Windows 2000.	
-Hard disk space	Canon Utilities	
	ZoomBrowser EX (include PhotoRecord)	120MB
	PhotoStitch	40MB
	RemoteCapture	20MB
	Canon Digital Camera USB TWAIN Driver	15MB
	Canon Digital Camera RS-232C TWAIN Driver	15MB
	Adobe Photoshop LE (This is not included Canon Digital Camera Solution Disk 2.0)	40MB
-Interface	USB (Windows 98/Windows Me/Windows 2000 pre-install model and up-graded model from Windows 98 pre-install model to Windows Me). RS-232C (optional Interface Cable IFC-200PCS is required).	
-Display	800 x 600 pixels – 256 colors minimum, 1024 x 768 pixels – 16-bit color or more recommended.	
-Sound card	Playing back sound tracks from movie files requires.	

Playing back movie files and/or using QuickTime VR function requires QuickTime 3.0 or higher.
(QuickTime 4.1 is in the CD-ROM “DIGITAL CAMERA Solution Disk” included in this package.)
These softwares are not available on Windows Image Acquisition (WIA) function offered by Windows Me.

[Macintosh]

-Computer Model	Power Macintosh, PowerBook, iMac or iBook	
-OS	Mac OS 8.1 or higher, QuickTime 3.0 or higher (QuickTime 4.1 is in the CD-ROM “DIGITAL CAMERA Solution Disk” included in this package.)	
-CPU	PowerPC	
-RAM	20MB RAM minimum for application memory.	
-Hard disk space	Canon Utilities	
	ImageBrowser EX	20MB
	PhotoStitch	30MB
	RemoteCapture	15MB
	Canon Digital Camera Plug-In Module	15MB
	Adobe Photoshop LE (This is not included Canon Digital Camera Solution Disk 2.0)	40MB
-Interface	USB (iMac, iBook and Power Macintosh NEW G3/Power Macintosh G4 or PowerBook G3 with Apple genuine USB interface only. iMac Update 1.0 and iMac Firmware Update 1.0 must be installed for use in your iMac computer under Mac OS 8.1.). RS-422 (Modem port or printer port – optional Interface Cable IFC-200MC is required).	
-Display	800 x 600 pixels – 256 colors minimum, 1024 x 768 pixels – thousands of colors or more recommended.	

Plug-In Module requires Adobe Photoshop® 3.0 or higher (Adobe Photoshop 5.0LE is included in this package).

<Accessories' Compatibility>

	PowerShot G1	PowerShot PRO90 IS	Note
<Battery>			
NB-6N	X	X	for PS 600, 600N
NB-5H	X	X	for PS A, S series
NB-4H	X	X	for PS Pro70
NB-1L	X	X	for IXY DIGITAL/DIGITAL IXUS/PS S100 DIGITAL ELPH
BP-511	O	O	for Video Camera FV-2, FV-10
<Adapter/Charger>			
CB-15N	X	X	for PS 600, 600N
CA-PS100/100E	X	X	for PS A, S series
CA-PS200	X	X	for PS Pro70
CA-PS300	X	X	for IXY DIGITAL/DIGITAL IXUS/PS S100 DIGITAL ELPH
CB-2L/2LE	X	X	for IXY DIGITAL/DIGITAL IXUS/PS S100 DIGITAL ELPH
CA-560	O	O	for Video Camera FV-2, FV-10
CR-560	O	O	for Video Camera FV-2, FV-10
<DC Coupler>			
DR-100/100A	X	X	for PS A, S series
DR-200	X	X	for PS Pro70
DR-300	X	X	for IXY DIGITAL/DIGITAL IXUS/PS S100 DIGITAL ELPH
<Lens accessories>			
WC-PS28	X	X	for PS 600, 600N
WC-DC58	O	O	for PS G1, PRO90 IS
TC-DC58	O	X	for PS G1
250D 58mm	O	X	for EOS
500D 58mm	X	O	for EOS
LA-DC58	O	X	for PS G1
LH-DC58	X	O	for PS PRO90 IS
<Speedlite>			
220EX	O	O	for EOS, PS Pro70
380EX	O	O	for EOS, PS Pro70
550EX	O	O	for EOS
420EX	O	O	for EOS
<Wireless controller>			
WL-DC100	O	O	for G1, PS PRO90 IS

	PowerShot G1	PowerShot PRO90 IS	Note
<Cable etc.>			
VC-100	X	X	for PS A, S series
VC-200	X	X	for IXY DIGITAL/DIGITAL IXUS/PS S100 DIGITAL ELPH
AVC-DC100	O	O	for G1, PS PRO90 IS
IFC98B/15	X	X	for PS600, 600N
IFCDOS/V	X	X	for PS600, 600N
IFC-100PC	X	X	for PS A series, PS Pro70
IFC-100MC	X	X	for PS A series, PS Pro70
IFC-200PCS	O	O	for PS S series
IFC-200PCU	O	O	for PS S series
IFC-200MC	O	O	for PS S series
AD-PC98	O	O	for PS S series
<Case>			
SC-10	X	X	for PS 600, 600N
SC-PS100	X	X	for PS A, S series
SHC-PS200	X	X	for PS Pro70
SC-PS300	X	X	for IXY DIGITAL/DIGITAL IXUS/PS S100 DIGITAL ELPH
SC-PS400	O	X	for PS G1
SHC-PS300	X	O	for PS PRO90 IS
<All Weather Case>			
AW-PS100	X	X	for PS A5
AW-110	X	X	for PS A5Z
AW-PS200	X	X	for IXY DIGITAL/DIGITAL IXUS/PS S100 DIGITAL ELPH

5-3 Main accessory specifications

<Wide Converter WC-DC58>
-Magnification : Approx. 0.8X
-Focal length : infinity
-Lens construction : 3 groups 3 pieces
-Focusing range : 10mm (0.03 ft.) -infinity
(on maximum wide angle, measured from front lens)
-Dimension : Length : 40.2mm (1.6 in.)
Maximum diameter : 80.0mm (3.1 in.)
-Weight : 157g (5.5 oz)
-Attaching to the camera : 58mm standard filter screw
(The LA-DC58 is required to attach the WC-DC58 to PowerShot G1)

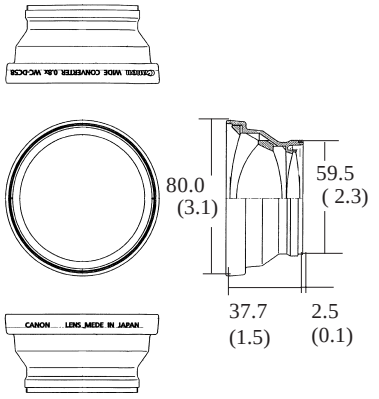


Fig. 5-1 Wide Converter WC-DC dimensions. (mm (inch))

<Tele-converter TC-DC58>
-Magnification : Approx. 1.5X
-Focal length : infinity
-Lens construction : 2 groups 3 pieces
-Focusing range : 400 mm (1.3 ft.) -infinity
(at telephoto end, measured from front lens)
-Dimension : Length : 37.3mm (1.5 in.)
Maximum diameter : 65.0mm (2.6 in.)
-Weight : 117g (4.1 oz)
-Attaching to the camera : 58mm standard filter screw
(The LA-DC58 is required to attach the TC-DC58 to PowerShot G1)

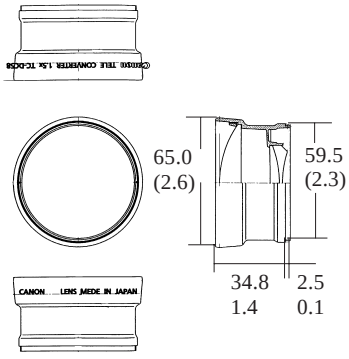


Fig. 5-2 Tele Converter TC-DC58 dimensions. (mm (inch))

<Close-up Lens 250D 58mm>
-Focal length : 250mm
-Focusing range : 120 - 200 mm (0.4 - 0.7 ft.) (measured from front lens with Macro mode)
*Even if the user is shooting in normal AF mode with the Close-up Lens attached, the camera will focus within a range of 200 - 250 mm (0.7 - 0.8 ft.).
-Attaching to the camera : 58mm standard filter screw
(The LA-DC58 is required to attach the 250D to PowerShot G1)
-Weight : Approx. 80g (2.8 oz)

<Conversion Lens Adapter LA-DC58>
-See Fig. 5-3 for the dimensions.
-Weight : Approx. 15.6g (0.6 oz)
*To attach the LA-DC58 to the PowerShot G1, first remove the lens ring, then attach the adapter in its place.

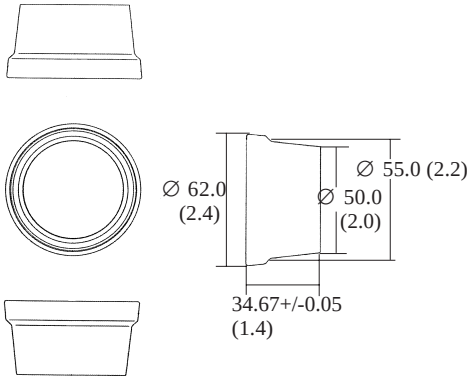


Fig. 5-3 Conversion Lens Adapter LA-DC58 dimensions (mm (in.))

<AV Cable AVC-DC100>
- RCA pin plug-L plug
- See Fig. 5-4 for the dimensions.

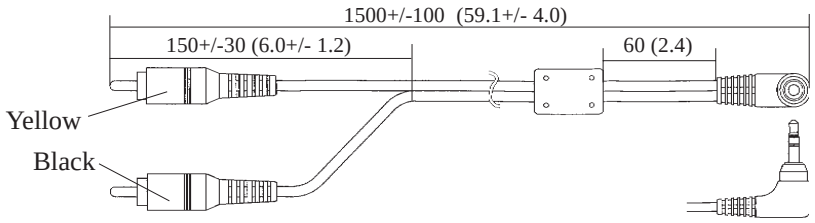


Fig. 5-4 AV Cable AVC-DC100 dimensions (mm (in.))

<Battery Pack BP-511>

-Type : Lithium-ion secondary battery
-Nominal voltage : DC 7.4 V
-Nominal capacity : Approx. 1,100 mAh
-Charging time : Approx. 80 min. (charging the battery installed in the camera)
(Adequate charge for use) Approx. 80 min. (charging with CG-560 and CA-560, rapid charging)
Approx. 80 min.
(charging with CG-560 and CB-560, rapid charging by car)
-Operating Temperature : 0-40 C (32 - 104 F)
-Operating humidity : 65% or less RH
-Dimensions (W X H X D) : Approx. 38 X 55 X 21 mm (1.5 x 2.2 x 0.8 in.)
-Weight : Approx. 70 g (2.5oz)

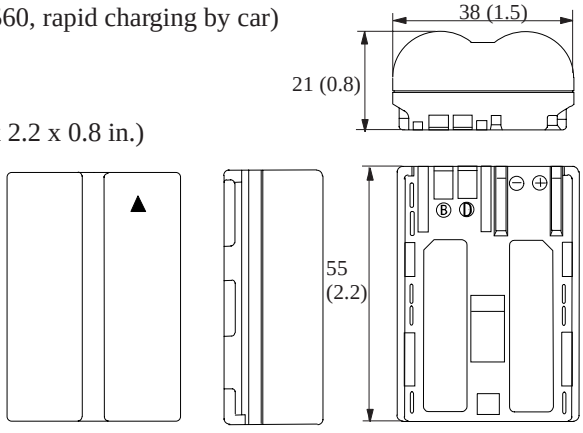


Fig. 5-5 Battery Pack BP-511 dimensions (mm (in.))

<Compact Power Adapter CA-560>

-Rated input power source : AC 100-240 V (+/- 10%, 50Hz/60Hz)
-Nominal rated output : DC 9.5V 2.7A (Japan)/DC 9.5V 2.7A (North America)/DC 9.5V 2.7A (PAL)
-Power Consumption : Approx. 60VA (100V)-75VA (240V) (Japan)/Approx. 34W (North America)/
Approx. 34W (PAL)
-Operating Temperature : 0 - 40 C (32 - 104 F)
-Recommended temperature : 10 - 30 C (50 - 86 F)
-Dimensions (W X H X D) : Approx. 57 X 28 X 104 mm (2.2 x 1.1 x 4.1 in.) (the main unit only)
Adapter cable length : Approx. 1.8 m (71.0 in.)
-Weight (the main unit only) : Approx. 180 g (6.3 oz) (Japan)/Approx. 180 g (North America)/Approx. 180 g (PAL)
(Power cable) Approx. 90 g (3.2 oz) (Japan)/Approx. 115 g (4.1 oz) (North America)/
Approx. 115 g (4.1 oz) (PAL), Approx. 90 g (3.2 oz) (E),
Approx. 150 g (5.3 oz) (B), Approx. 125 g (4.4 oz) (AS)

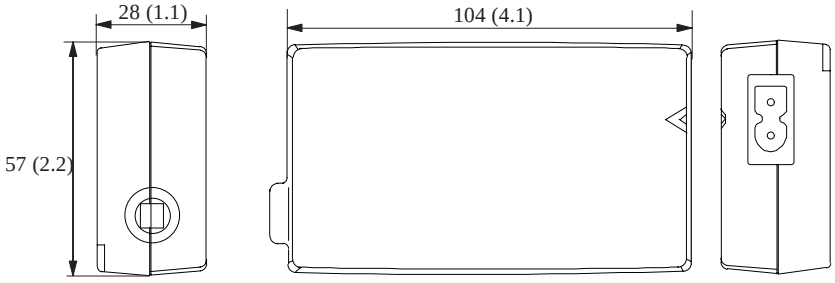


Fig. 5-6 Compact Power Adapter CA-560 dimensions (mm (in.))

<Charge Adapter/Car Battery Cable Kit CR-560>

<Charge Adapter CG-560>

-Input voltage : DC 9.5 V

-Input current : DC 2.5A 2.7A (DC 9.5V, while charging the battery pack)

-Nominal output : Battery terminals : DC 8.4V 1.6A (while charging the BP-511)
DC OUT terminals : DC 8.4V 1.6A (with the adapter)

-Charging detection : Voltage/current detection by a microprocessor

-Charging time : BP-511: Approx. 80 min.

-Charging indications : No Battery Pack attached : Off
Battery Pack charging : Flashing in red
Charging completed : Lit up in red
Battery Pack malfunction : Flashing>>Off

-Terminal (DC IN) : Low type 3-pin special connector

-Operating temperature : 0 - 40C (32 - 104 F)

-Recommended temperature : 10 - 30 C (50 - 86 F)

-Dimensions (WXHXD) : Approx. 93 X 36 X 71 mm
(3.7 x 1.4 x 2.8 in.)

-Weight : Approx. 140g (4.9 oz)

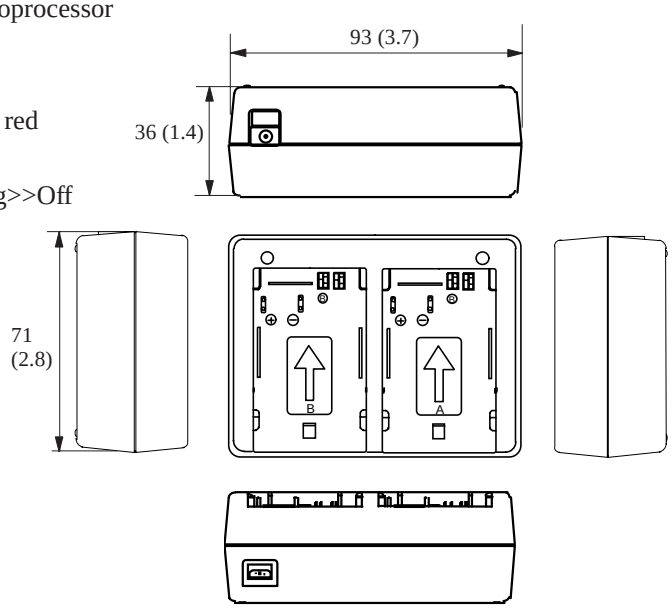


Fig. 5-7 Charge Adapter CG-560 dimensions (mm (in.))

<Car Battery Cable CB-560>

-Type : Car Battery Cable with a cigarette plug

-Connectable cigarette lighter socket : DC 12V/DC 24V, minus grounded (can be used in cars in most of countries.)

-Protection device : Fuse (built-in 125V, 4A (factory preset))

-Cable length : Approx. 1.8m (71.0 in.), with a special terminal on the other end.

-Weight : Approx. 80g (2.8 oz)

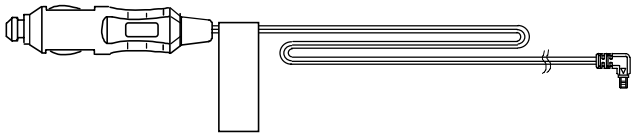


Fig. 5-8 Car Battery Cable CB-560 dimensions (mm (in.))

<Wireless Controller WL-DC100>

-Type : Infrared

-Range : 5m (16.4 ft.) or longer (front, indoor)

-Directivity : Horizontal 15 degree 3m (9.8 ft.) or longer/
Vertical 15 degree 1m (3.3 ft.) or longer

-Battery : CR2025

-Power current consumption: 14mA +/- 10mA

-Stand by current : Max. 20µA

-Weight : Approx. 10 g (0.4 oz)

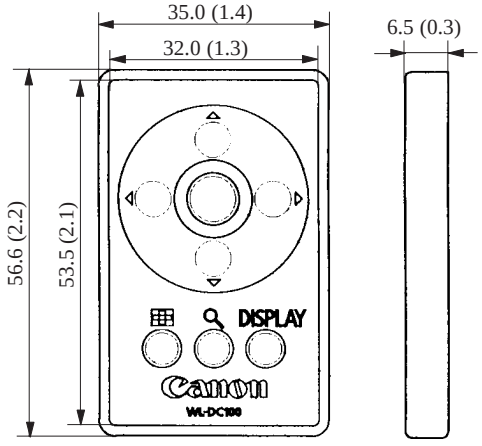


Fig. 5-9 Wireless Controller WL-DC100 dimensions (mm (in.))

6. Operation

6-1 Operating Procedures

<Shooting Operation>

<Basic picture-taking (Auto mode)>
-Set the main dial to “Shooting mode” and set the mode dial to “Auto. ”
-Frame the subject and press the shutter button.

-Using the Optical Viewfinder-
Look through the optical viewfinder, frame the subject, then press the shutter button halfway. The Indicator will light in green and the beep will sound twice. Then press the shutter button completely to take the picture. The Shutter sound will sound or beep will soud once. When the camera finishes writing the image to the buffer memory, the Indicator turns off.

-Using the LCD monitor -
Press the DISPLAY button to turn on the LCD monitor, if it is turned off. After framing the object, press the shutter button halfway. The image displayed on the LCD monitor will freeze for a moment. The Indicator will then immediately light in green and the beep will sound twice. Press the shutter button completely to take the pictureand the shutter sound will sound or beep will sound once. When the picture is taken, the LCD monitor will blackout once and then the image is displayed again (quick review). When the camera starts writing the image to the CF card, the Indicator turns off and the LCD monitor resumes a part of viewfinder.

-The quick review displays the image on the LCD monitor for 2 sec. in default mode. The quick review will still display the image even when LCD monitor is turned off. (keep to display the quick review if the shutter button is pressed completely and holded). Press the SET button when the quick review is displayed, keep to display the quick review after the shutter button is released.

<Using Flash>
-Press the FLASH button to toggle the flash mode in the following loop: Auto>>Red-eye reduction Auto>>Red-eye reduction ON>>ON (fill-flash)>>OFF (flash disabled)>>Auto. Select the desired flash mode.
-When the flash are ready and you press the shutter button halfway, the Indicator lights in orange and the beep sounds twice. Press the shutter button completely to take the picture.

<Self-timer>
-Press the Self-timer button to select the Self-timer shooting mode.
-When the shutter button is pressed halfway, the camera operates in the same way as with "Basic picture-taking." When the shutter button is pressed completely, the self-timer lamp blinks. The blinking rate speeds up after 8 sec. and the picture is taken 2 sec. later.

<Continuous Shooting (Creative zone/Image zone except for StitchAssist and Movie)>
-Press the Continuous Shooting button to select the continuous shooting mode.
-The camera operation when the shutter button is pressed halfway is the same as with "Basic picture-taking."
-Keep pressing the shutter button completely to shoot continuously. If the beep is set, beep sounds after each shot is taken. If the LCD monitor is used, a quick review image is displayed after each shot is taken.
-Release the shutter button to stop continuous shooting.

<Wireless control shooting>
-Press the DRIVE button to select the self-timer mode and you can use the wireless controller to take still pictures and movie and zooming operation.

<Macro feature (Auto/Creative zone/Portrait/B&W/StitchAssist/Movie)>
-Press the MACRO button and use the Optical viewfinder or LCD monitor to frame the subject, then press the shutter button halfway. The macro indicator lights yellow.
-The camera operation when the shutter button is pressed halfway and completely is the same as with “Basic picture-taking.”
-In Macro mode, LCD monitor is recommend for avoid parallax.

<Picture-taking with Stitch Assist (Enabled in all modes except for RAW mode, at EVF only.)>
-Set the mode dial to Stitch Assist mode
-Set the picture-taking direction with the Omni Selector, and press the SET button or take a picture (SW2).
-When the first picture is taken, aim the camera to take the next picture which is displayed in the Live image. If you want to take the same picture again, press the Omni Selector (LEFT/RIGHT) in the direction of the previous picture. The previous picture will then be displayed and you can take another shot to replace it. Or you can go back to taking the next picture by pressing the Omni Selector (LEFT/RIGHT) in the next direction.
-Press the SET button to exit.

<Digital Zoom (Enabled in all modes at EVF except for StitchAssist, movie and RAW modes.)>
-The digital tele-converter ratio (Off/2x/4x) is selectable with the MENU button.
-As a short cut, the digital zoom ratio can also be changed with the SET + Omni Selector [TELE/WIDE].

<Exposure compensation, white balance, AEB, and flash exposure compensation>
- Pressing the Exposure compensation/white balance/AEB/flash exposure compensation button switches the function in the following sequence: Exposure compensation, white balance, AEB, and flash exposure compensation.
[Exposure compensation]
- Set the exposure compensation amount with the Omni Selector. The exposure compensation index bar shifts position to indicate the exposure compensation amount on the Display panel and the LCD monitor.
[White balance]
- Use the Omni Selector to select the desired item. The selected white balance setting is displayed on the Display panel and the LCD monitor.
-For custom white balance, select the icon and aim at a white sheet of paper. Then press the * (AE lock) button to obtain the data.
-Press the SET button to register the setting. Then follow the normal picture-taking procedure.
[AEB]
-Press the RIGHT key on the Omni Selector to increase the AEB range or press the LEFT key to narrow the AEB range.
[Flash exposure compensation]
-Press the Omni Selector (LEFT/RIGHT) to set the flash exposure compensation amount. The procedure is the same as for setting the exposure compensation.

<Shooting movie (at EVF only)>
-Turn the Mode Dial to “Movie.”
-The Movie starts recording at SW2 and stops when SW2 is pressed again. The recording stops when the maximum recording time elapses (30 sec.) or when the buffer memory or CF card become full.

<Creative Zone>
-Set the Mode Dial to M, P, Av, or Tv.
-The Display panel displays all the values that can be set for the respective mode. At EVF, the values are also displayed on the LCD monitor.
-Use the Omni Selector to set the desired value.

<Manual focus (Enabled in all modes except for Auto and Pan Focus, at EVF only.)>
-Press the MF button and the MF indicator lights yellow.
-Press and hold the MF button + Omni Selector (UP/DOWN) to set the focusing distance. An indicator showing the current position will be displayed on the LCD monitor.

<AE Lock/FE Lock (Enabled in all Creative Zone except for M, at EVF only.)>
-Set the Mode Dial to a Creative Zone mode.
-AE lock takes effect at SW1 or when the AE lock/FE Lock button is pressed while there is no other camera operation. FE is locked in Flash mode is set.
-During AE lock, the image is captured at SW1 and SW2.

< Spot metering (Creative Zone modes only.)>
-Set the Mode Dial to a Creative Zone mode.
-The spot metering button toggles between spot metering and center-weighted averaging metering. Set it to spot metering.

<Video/Audio Out>
-In shooting modes other than Stitch Assist, the EVF output can be switched to the A/V Out. The EVF signal is output to Video Output when the video jack is connected.

<Rec. Menu>
-In shooting mode, press the MENU button to display the Rec Menu.
-Press the Omni Selector to select the item to be set. The following items can be set:
-Resolution (Large [Default]/Middle/Small)
-Compression (Super Fine/Fine [Default]/Normal)
-File Format (RAW/JPEG[Default])
-ISO speed (50 [Default]/100/200/400/Auto)
-Digital Zoom (OFF [Default]/2X/4X)
-AF Mode (SINGLE/CONT[Default])
-Review (OFF/2 sec.[Default]/10 sec.)
-File No. reset (ON/OFF [Default])
-Contrast (-/0[Default]/+)
-Sharpness (-/0[Default]/+)
-Saturation (-/0[Default]/+)

-For each item, press the Omni Selector to make the selection, then press SET button to set it.
-Press the MENU button to exit.

<Setting MENU (Shooting/Playback)>
-Press the MENU button to display the Setting Menu.
-Press the Omni Selector to select the item to be set. The following items can be set:
-Beep (ON [Default]/OFF)
-LCD Brightness (Bright/Normal [Default])
-Shutter Sound (in shooting) (2 [Default]/0-5)
Playback Vol. (in playback) (3 [Default]/0-5)
-Auto Power Down (ON [Default]/OFF)
-Date/Time (set the date and time/Style)
-Format (CF)
-Language (English/Deutsch/Francais/Espanol/Japanese [NTSC version])
(English/Deutsch/Francais/Nederlands/Dansk/Suomi/Itliano/Norsk/Svenska/ Espanol [PAL version])
-Video System (NTSC/PAL)

<Play>

<Normal play>
-Set the main dial to “Play mode.”
-Press the Index button to to switch from Single to Multi. In Multi mode, to display 3X3 thumbnail images. The lower right thumbnail is the latest one. Press the JUMP button to switch JUMP mode. In single play, press the Omni Selector (LEFT/RIGHT) to jump 9 images ahead or back. In Multi mode, press the Omni Selector (LEFT/RIGHT) to jump next or previous page. Press the SET+[LEFT] or SET+[RIGHT] to jump the last or first image in both modes.
-In Single mode, keep to press the Omni Selector (LEFT/RIGHT) button, to do high-speed image search mode. Release the button to be select the image at that moment.

<Wireless Control Playback>
-To enable remote control operation, set the play mode.
-Operations with the Omni Selector and DISPLAY button, toggling between single-frame and multiple playback, and image enlargement during playback are possible by using Wireless Controller WL-DC100.
-Press the shutter button of WL-DC100 to playback movie.

<Magnification>
-In Single mode, press the Magnification button to toggle in the following loop : 1X >>2.5X >>5X>>1X. Slelct desired magnification ratio and magnify the image on the LCD monitor.
-Press the Omni Selector to scroll the magnified image.

<Movie Playback>
-A movie file (AVI) can be played with the SET button. During playback, press the SET button once to pause the playback and press it again to resume playback.
-During playback, press the Omni Selector (LEFT/RIGHT) to stop the playback and see the previous or next image.

<Show info>
-Press the DISPLAY button. In Single play mode, standard display type and detailed type display type can be selected.
-Details of information are as follows;
<Standard display>
1.File number 2. Movie Icon 3.Image number/total number of images 4.Protect setting icon/Sound/Recording pixels/Image compressionlevel / DCF annotated information icon 5.Shooting Date/Time
<Detailed display>
6. Shooting mode dial information 7.Tv value 8. Av value 9. Exposure compensation value
10.Flash exposure compensation value 11.Light metering method icon (spot metering only)
12.White balance setting icon 13. Macro/Manual Focus 14. ISO speed setting

<Other Play Settings>
-In the play mode, press the MENU button to display the Play Menu.
-Press the Omni Selector to select the desired item, then press the SET button. The following items can be set:
-Single Erase
-Erase all
-Protect
-Rotate (0 degree, 90 degrees, 270 degrees)
-Slide Show
-Print Order (Marks the images to be printed with Canon Digital Printer CD-300 and the printers compatible with DPOF)

<Erasing Images>
-In the play mode, press the MENU button to display the Play Menu.
-Select "Single Erase" or "Erase All", then press the SET button.
-When Single Erase has been selected, the image displayed before the Play Menu appeared will be displayed. Press the Omni Selector to select the image to be erased. Then press the SET button. A confirmation message will be displayed. Select "OK" and press the SET button. If "Erase All" is selected, the confirmation message will appear immediately. Select "OK" and press the SET button.
-Press the * (AE Lock) button to set the short cut for single erase.

<Rotate>
-In the play mode, press the MENU button to display the Play Menu. Select "Rotate".
-When the target image is displayed, pressing the SET button rotates the image to the angle of (0, 90, 270) degree.
-Press the MENU button to fix.

<Image-protect>
-On the Playback menu, select "Protect" and press the SET button.
-When the target image is displayed, pressing the SET button sets the image-protect. (If the image is already protected, the image-protect will be canceled.)

<Slide Show (Still image/Movie)>
-While in the play mode, press the MENU button to display the Play Menu. On this menu, select Slide Show and then press the SET button.
-Select “Start” and press the SET button.
-To display all the images in numeric order, select "All Images." To display only the previously marked images in the specified order, select "Show 1-3."

-Marking Images
1.On the Slide Show menu, select "Show 1-3" and then press the SET button. Select "Select" and then press the SET button.
2.Single image will be displayed. To mark an image, use the Omni Selector (LEFT/RIGHT) to select the image and then press the Omni Selector (UP). A number will then appear on the marked image. To remove the check mark, select the marked image and then press the Omni Selector (DOWN) button to unmark the image, then press the MENU button.

-To set the play time or to repeat the slide show, use the Set up menu.
-After selecting the play mode, select "Start" and press the SET button to start the Slide Show.

<Print order>
-On the Playback menu, select "Print order" and press the SET button.
-Below the current settings displayed, select "Order," "Set up," or "Reset," then press the SET button.
-When you select "Order," press the Omni Selector to display the images. Then press the SET button to so you can specify the number of copies. The current number will be displayed. Press the Omni Selector to change the number.
-When you select "Set up," set the print type, date, and file No. imprint, then press the SET button.
-To reset all the settings to the default, select "Reset" and press the SET button and select "OK." The image selection will also be cleared.

<Connection to a TV set>
-Use the A/V cable (provided) to connect the TV’s video IN and sound IN terminal to the camera’s A/V OUT terminal.
-Set the camera's Mode Switch to PLAY to display the image on the TV monitor.
-Press the Index button to select Single or Multi.

REPAIR INFORMATION

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2-4 Disassembly of Main Units R29
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3-2 Adjustment Tool R61
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1 Troubleshooting

1-1 When an Error Code is Displayed

[Remedy]
- Check for any abnormalities in the mounting of probable faulty parts or connector connections referring to the table below.
- Try replacing probable faulty parts referring to the table below.

[NOTE]
- The error code is displayed on the Display Panel (B/W LCD PANEL).
- Adjustments must be performed after the part has been replaced. For details, see “3 Adjustments.”

Error Code	Name	Occurrence Conditions	Cause and Probable Faulty Part * Numbers in parentheses ( ) are the symbols on the most probable circuit component.	See Page
E02	AF TIME OUT	AF processing did not end within the specified time.	MAIN PCB ASS’Y(IC117/IC121/CN104)	R15,E1,E2
			OPTICAL UNIT(Focus Motor)	R21
		The focus lens was not driven.	MAIN PCB ASS’Y(IC117/CN104)	R15,E1,E2
			OPTICAL UNIT(Focus Motor)	R21
E03	EF TIME OUT	Auto Flash Control did not end within the specified time.	MAIN PCB ASS’Y (IC116/IC117/IC121/CN104)	R15,E1,E2
			OPTICAL UNIT(Focus Motor)	R21
E09	JPEG DMA TIME OUT	JPEG processing did not end within the specified time.	MAIN PCB ASS’Y(IC121)	R15,E1,E2
E16	IMAGING TIME OUT	Communications between the CPU and peripheral ICs did not end within the specified time during or after photography in the EVF mode.	MAIN PCB ASS’Y(IC121/IC122/IC127)	R15,E1,E2
LENS	ZOOM LENS ERROR	Feeding out of the lens barrel did not end within the specified time after the power was turned ON.	MAIN PCB ASS’Y(IC117/IC127)	R15,E1,E2
			OPTICAL UNIT	R21
		Detection of the zoom PI (photo-interrupter) failed.	OPTICAL UNIT	R21
			MAIN PCB ASS’Y(IC117/IC121)	R15,E1,E2
			The lens barrel is fed out with the lens cap attached → Remedy: Remove the lens cap, and restart the camera.	—
		The zoom position error was detected.	OPTICAL UNIT	R21
			MAIN PCB ASS’Y(IC117/IC121)	R15,E1,E2
			Either zoom movement is obstructed by some external cause, or there was some unintentional camera zoom movement. →Remedy: Restart the camera.	—

Error Code	Name	Occurrence Conditions	Cause and Probable Faulty Part * Numbers in parentheses ( ) are the symbols on the most probable circuit component.	See Page
E23	CF NO SPACE	When the CF becomes full during writing of photographed images to CF, writing is repeatedly performed with the JPEG compression ratio successively increased to reduce the size of the image file until it can be successfully written to CF. This error occurs when writing of the JPEG image file fails after 10 retries at increasingly higher compression ratios. * The same applies in the case of the Micro Drive.	MAIN PCB ASS'Y(IC121)	R15,E1,E2
E24	POWER ON ERROR	The power of the imaging circuit on the MAIN PCB ASS'Y was not detected.	MAIN PCB ASS'Y	R15,E1,E2
			DC/DC CONVERTER PCB ASS'Y	R27,E13,E14
		The power of the LCD PCB ASS'Y was not detected.	LCD PCB ASS'Y	R58,E3,E4
			HINGE UNIT	R49
E25	FOCUS PI ERROR	Detection of the focus PI (photo-interrupter) failed.	OPTICAL UNIT(Focus Motor)	R21
			MAIN PCB ASS'Y(IC117/CN104)	R15,E1,E2
E26	CAPTURE TIME OUT	Writing of the photograph image to SDRAM did not end within the specified time.	MAIN PCB ASS'Y (IC113/IC121/IC132/CN133)	R15,E1,E2
E27	CF WRITE TIME OVER	Free area could not be secured in the buffer for the photograph image within the specified time in the continuous shooting mode.	CF CARD/MICRO DRIVE	—
			MAIN PCB ASS'Y(IC121)	R15,E1,E2
E30	POWER OFF ERROR	The camera power was turned OFF while the image was being recorded to the CF Card/Micro Drive (while the green LED was blinking). (The error code is displayed when the camera is next turned ON.) * This error may occur after E23.	The battery or DC plug was removed while the image was being recorded to the CF Card/Micro Drive. →Remedy: Restart the camera.	—
E50	CF FORMAT ERROR	The CF Card/Micro Drive could not be formatted properly.	CF CARD/MICRO DRIVE	—
E52	QUICK REVIEW ERROR	Review of the photograph image failed.	MAIN PCB ASS'Y(IC121)	R15,E1,E2

1-2 When a Problem Occurs

[Remedy]
- Check for any abnormalities in the mounting of probable faulty parts or connector connections referring to the table below.
- Try replacing probable faulty parts referring to the table below.

[NOTE]
- Adjustments must be performed after the part has been replaced. For details, see “3 Adjustments.”

Problem (when an error code is not displayed)	Cause and Probable Faulty Part * Numbers in parentheses ( ) are the symbols on the most probable circuit component.	See Page
The camera does not work.	DC/DC CONVERTER PCB ASS’Y (CN1/CN2/CN5/IC01/IC02/F01/F02)	R27,E13,E14
	MAIN PCB ASS’Y(CN01)	R15,E1,E2
	MAIN DIAL BRUSH	R41
	TOP MODULE UNIT	R44,E5,E6
	BATTERY BOX MAIN UNIT	R53
	BATTERY EJECT SPRING	R53
	POWER LEAD	R53
The image is not displayed on the LCD Monitor.	HINGE UNIT	R56
	MAIN PCB ASS’Y(SW100/CN105/CN106)	R15,E1,E2
	BUTTON PCB ASS’Y(SW3)	R49,E7,E8
	LCD PANEL	R58
	LCD PCB ASS’Y (IC102/CN100/CN101/CN102)	R58,E3,E4
	BACK LIGHT UNIT	R59
The image is not reversed even if the LCD Monitor is rotated.	HINGE UNIT	R56
	LCD PCB ASS’Y(IC105)	R58,E3,E4
	MAIN PCB ASS’Y(CN106)	R15,E1,E2
The photograph image is abnormal.	OPTICAL UNIT	R21
	MAIN PCB ASS’Y (CN103/CN104/CN107/IC121)	R15,E1,E2
The zoom does not function.	OPTICAL UNIT	R21
	MAIN PCB ASS’Y(CN102/CN103)	R15,E1,E2
	ZOOM BRUSH	R30
	TOP MODULE UNIT	R44,E5,E6
The Display Panel (B/W LCD) is strange.	B/W LCD PANEL	R42
	CONTACT RUBBER	R43
	TOP MODULE UNIT	R44,E5,E6
	MAIN PCB ASS’Y(CN102)	R15,E1,E2
The Built-in Flash does not fire.	FLASH UNIT	R46
	DC/DC CONVERTER PCB ASS’Y(CN3/IC02)	R27,E13,E14
	TOP MODULE UNIT(IC1)	R44,E5,E6

Problem (when an error code is not displayed)	Cause and Probable Faulty Part * Numbers in parentheses ( ) are the symbols on the most probable circuit component.	See Page
The External Flash does not fire.	TOP MODULE UNIT(IC1/CN1)	R44,E5,E6
	ACC. SHOE FPC	R38,E11,E12
	ACC. CONTACT UNIT	R39
	ACC. SHOE PIN	R36
	ACC. DETECT PLATE	R35
Video output is strange.	JACK PCB ASS'Y(J1/CN1)	R14
	VID FPC	R27
	DC/DC CONVERTER PCB ASS'Y(CN7)	R27,E13,E14
Communications with the personal computer is not possible.	DC/DC CONVERTER PCB ASS'Y (CN8/CN5)	R27,E13,E14
	MAIN PCB ASS'Y(IC114/CN101)	R15,E1,E2
The CF card or Micro Drive is not recognized.	CF CARD/MICRO DRIVE	—
	CF UNIT	R23,E10
	MAIN PCB ASS'Y(CN108)	R15,E1,E2
Sound cannot be recorded.	MIC. UNIT	R48
	TOP MODULE UNIT	R44,E5,E6
	MAIN PCB ASS'Y(CN100/IC106)	R15,E1,E2
Shutter sound/Sound is not played back.	SPEAKER UNIT	R45
	DC/DC CONVERTER PCB ASS'Y (CN6/CN5)	R27,E13,E14
	MAIN PCB ASS'Y(IC101/IC106)	R15,E1,E2
Operations from the Wireless Controller are not accepted.	TOP MODULE UNIT(IC5)	R44,E5,E6
Buttons do not work.	BUTTON PCB ASS'Y	R49,E7,E8
	TOP MODULE UNIT	R44,E5,E6
	MAIN PCB ASS'Y(CN102/CN100)	R15,E1,E2
The Mode dial does not work.	MODE DIAL BRUSH	R41
	TOP MODULE UNIT	R44,E5,E6
	MAIN PCB ASS'Y(CN102)	R15,E1,E2
The date setting is not held in memory.	BATTERY BOX MAIN UNIT	R53
	DATE LEAD	R53
	BUTTON PCB ASS'Y(CN4)	R49
	MAIN PCB ASS'Y(CN100/IC114)	R15,E1,E2
Battery charge error	DC/DC CONVERTER PCB ASS'Y(IC01)	R27,E13,E14

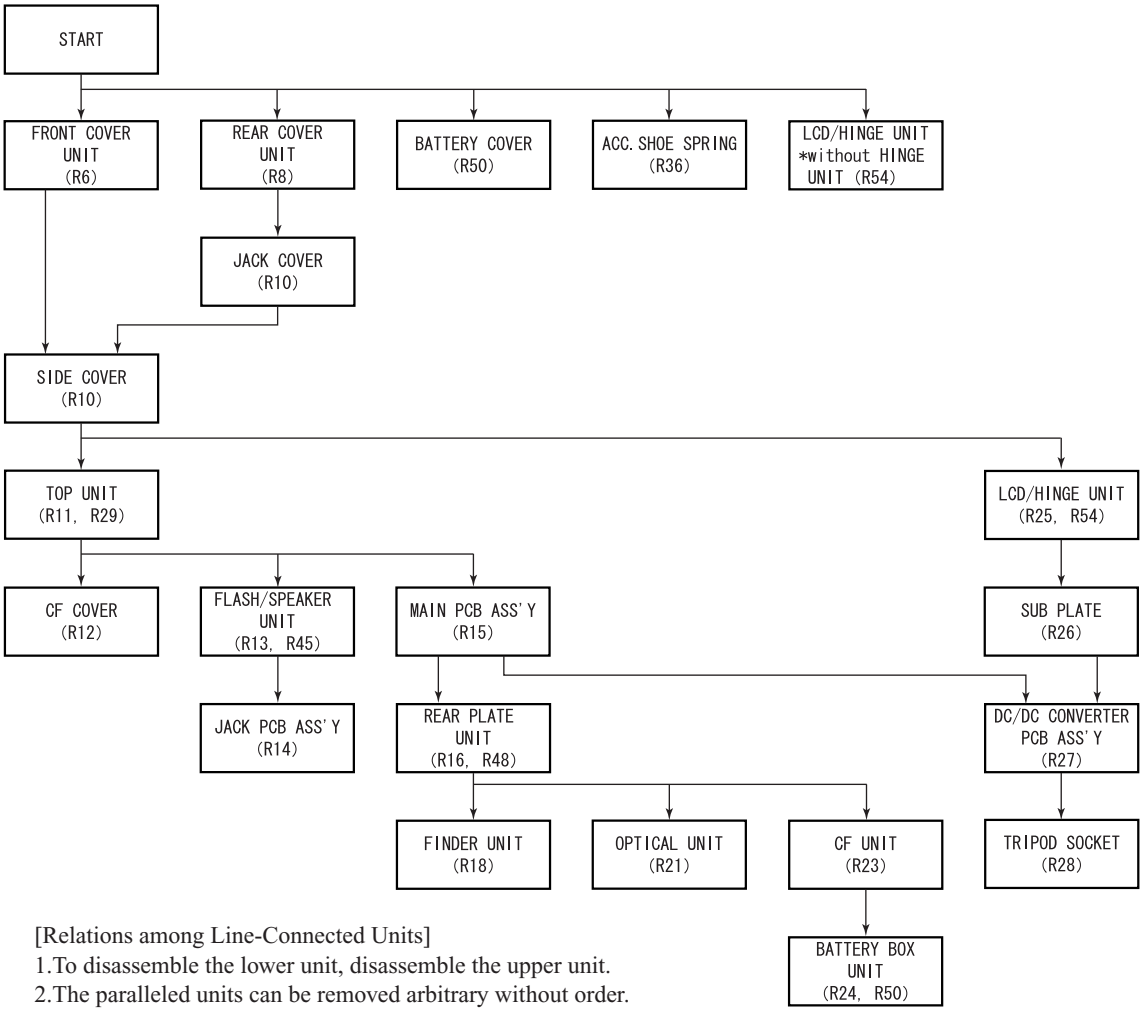
2 Disassembly and Assembly

2-1 Required Tools

DESCRIPTION	PARTS NO.	REMARKS
Screwdriver		Local Purchase
Tweezers		Local Purchase
Soldering iron		Local Purchase
Solder		Local Purchase
Steel wire		Local Purchase
ADHESIVE TAPE (ADHESIVE TAPE, SONY T4000)	CY4-6012-000	Refer to R16, R43, R45, R48, R49
DIA BOND NO.1663 (BOND, DIA BOND NO. 1663 BLACK)	DY9-3008-000	Refer to R32, R33, R37, R45, R46
CEMEDINE SUPER X (BOND,CEMEDINE SUPER X BLACK)	CY9-8118-000	Refer to R47
THREE BOND 1401C (BOND,THREE BOND 1401C)	CY9-8011-000	Refer to R37
LOGENEST RAMBDA A-74 (LUBE,LOGENEST RAMBDA A-74)	CY9-8102-000	Refer to R34, R52

2-2 Procedure

The following flowchart shows the procedure for disassembling the PowerShot G1.
To assemble, follow the procedure in reverse. *( ) : denotes the page to be referenced.



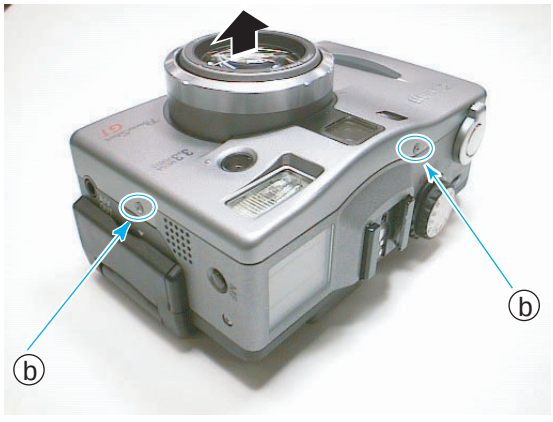
[Relations among Line-Connected Units]
1.To disassemble the lower unit, disassemble the upper unit.
2.The paralleled units can be removed arbitrary without order.

2-3 Removal of Main Parts/Units

2-3-1 FRONT COVER UNIT

STEP1

Remove the screws.
ⓐ X 2
ⓑ X 1

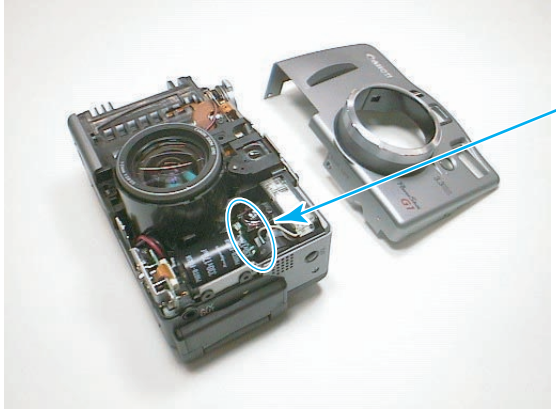


STEP2

Remove the screws.
ⓑ X 2

STEP3

Remove the FRONT COVER UNIT.

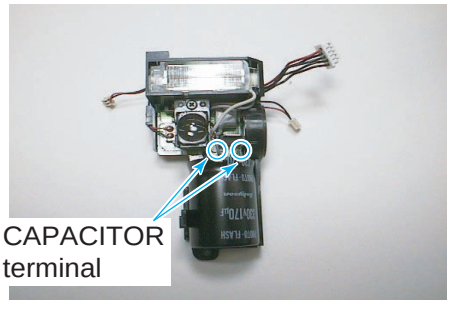


STEP4

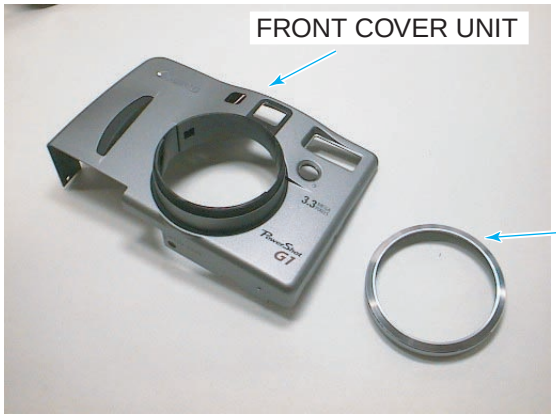
Bleed the capacitor.

Warning-High Voltage!

Do not touch the CAPACITOR terminal . Be sure to bleed the capacitor by the discharge resistor (approx. 1kΩ/5W).



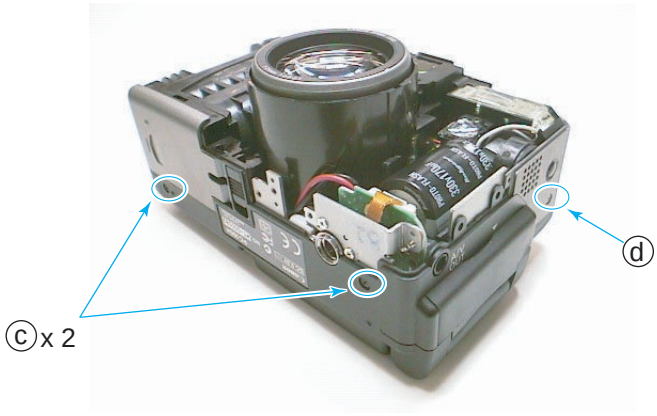
<Screw>
ⓐ : CD1-3280-000 (M1.7mm, L3.5mm, Self-Tap, Gray Metallic)
ⓑ : CD1-3277-000 (M1.7mm, L3.0mm, Gray Metallic)



STEP5

Remove the FRONT RING.

2-3-2 REAR COVER UNIT

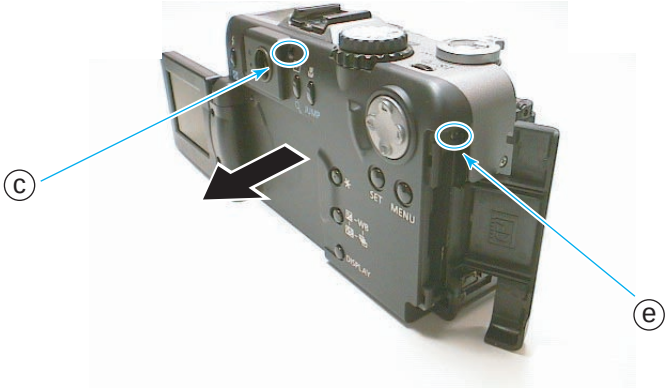


STEP1

Remove the screws.

ⓒ X 2

ⓓ X 1



STEP2

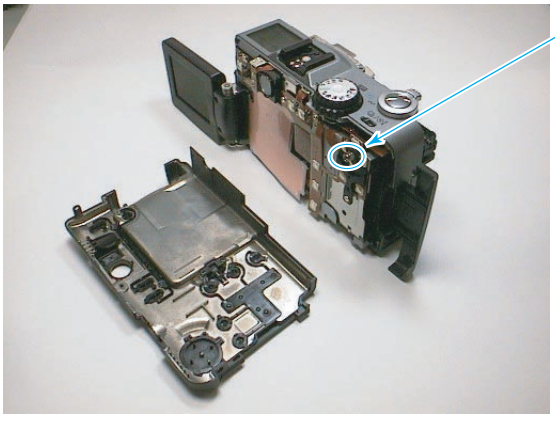
Remove the screws.

ⓒ X 1

ⓔ X 1

STEP3

Remove the REAR COVER UNIT.



STEP4

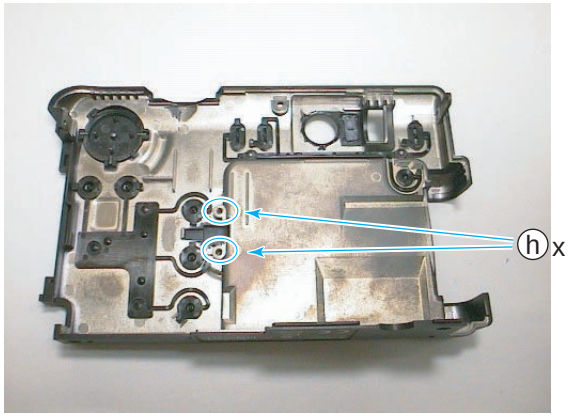
Remove the SELECTOR SPRING.

<Screw>

ⓒ : CD1-3278-000 (M1.7mm, L3.0mm, Black)

ⓓ : CD1-3279-000 (M1.7mm, L4.0mm, Gray Metallic)

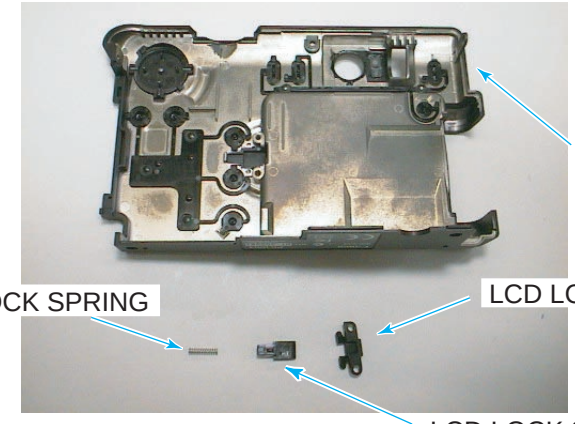
ⓔ : XA4-9170-409 (M1.7mm, L4.0mm, Self-Tap, Black)



STEP5

Remove the screws.

ⓗ X 2



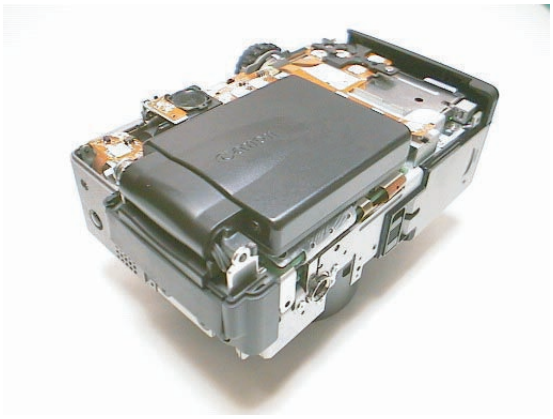
STEP6

Remove each of the parts.

<Screw>

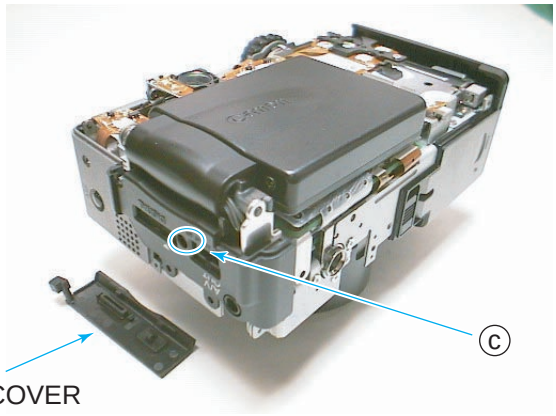
ⓗ : XA4-9170-359 (M1.7mm, L3.5mm, Self-Tap, Black)

2-3-3 SIDE COVER



STEP1

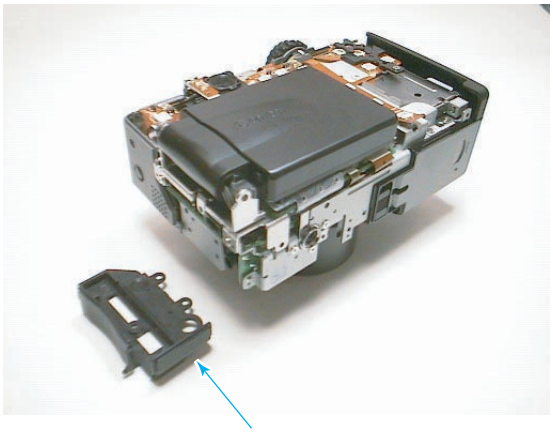
Remove the JACK COVER.



STEP2

Remove the screws.

ⓒ X 1

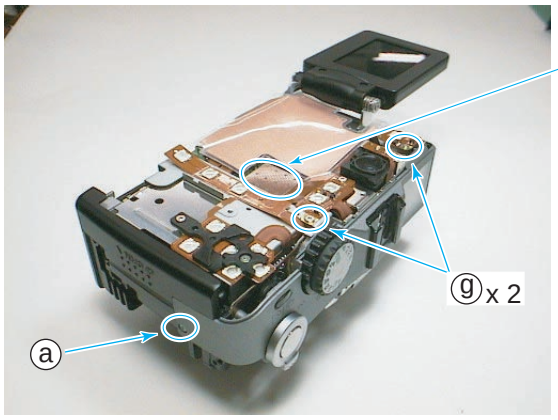


STEP3

Remove the SIDE COVER.

<Screw>

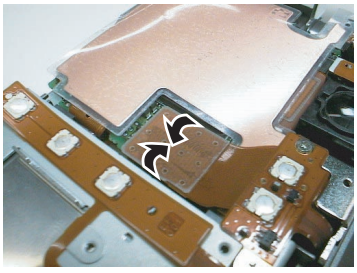
ⓒ : CD1-3278-000 (M1.7mm, L3.0mm, Black)



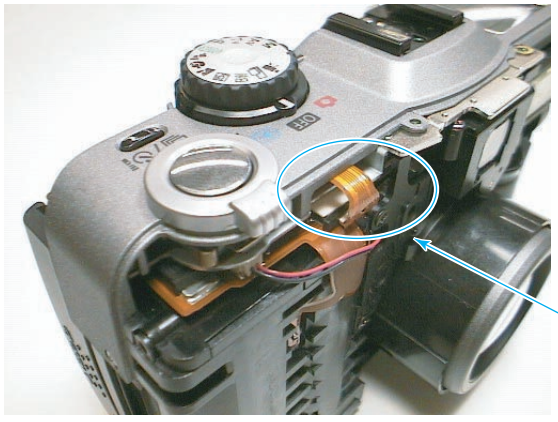
STEP1

Disconnect the flex.

Warning !



Disconnect the flex in the direction of the arrow. Otherwise, the connector may be damaged.



STEP2

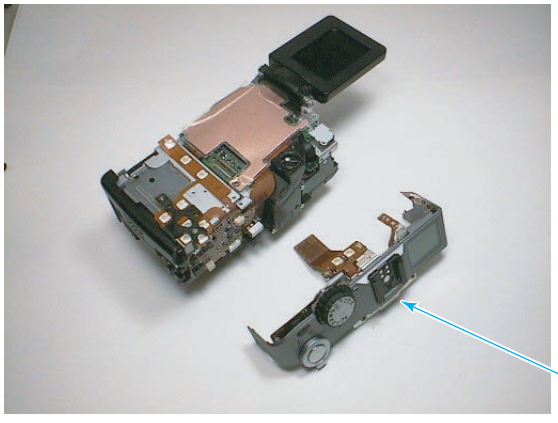
Remove the screws.

ⓐ X 1

ⓖ X 2

STEP3

Disconnect the flex.



STEP4

Remove the TOP UNIT.

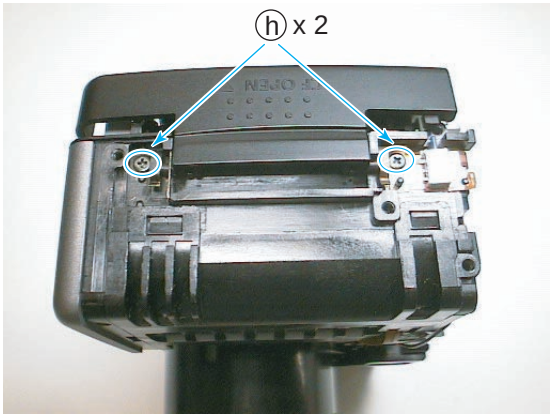
TOP UNIT

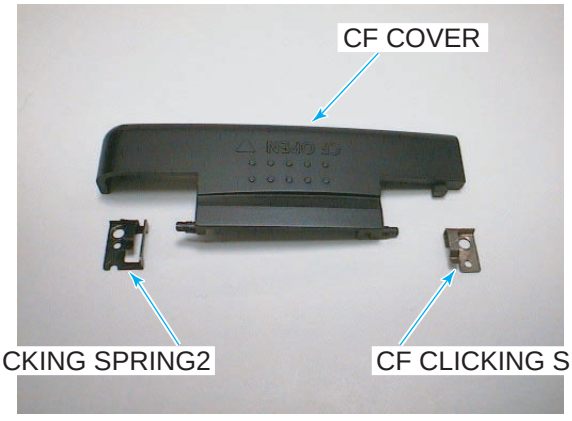
<Screw>

ⓐ : CD1-3280-000 (M1.7mm, L3.5mm, Self-Tap, Gray Metallic)

ⓖ : XA1-7170-167 (M1.7mm, L1.6mm)

2-3-5 CF COVER





STEP1

Remove the screws.

ⓗ X 2

STEP2

Remove the CF CLICKING SPRING1 and CF CLICKING SPRING2.

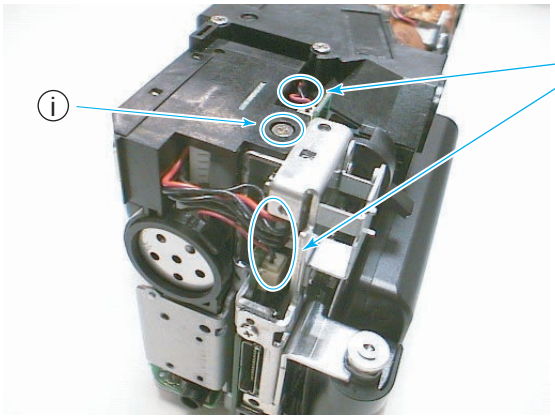
STEP3

Remove the CF COVER.

<Screw>

ⓗ : XA4-9170-359 (M1.7mm, L3.5mm, Self-Tap, Black)

2-3-6 FLASH/SPEAKER UNIT

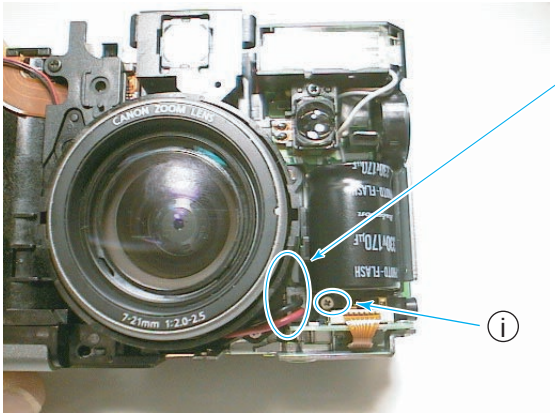


STEP1

Disconnect the cables.

STEP2

Remove the screw.
ⓘ X 1

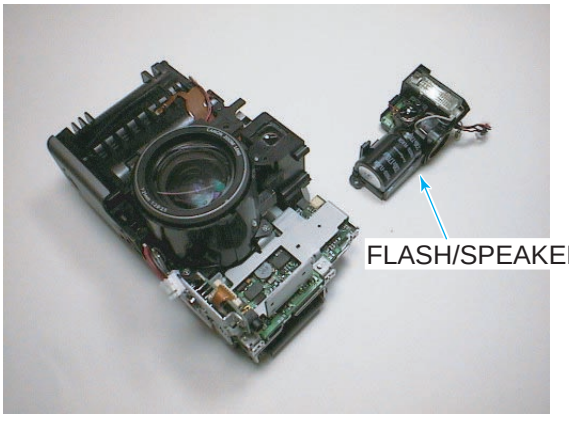


STEP3

Disconnect the cable.

STEP4

Remove the screw.
ⓘ X 1

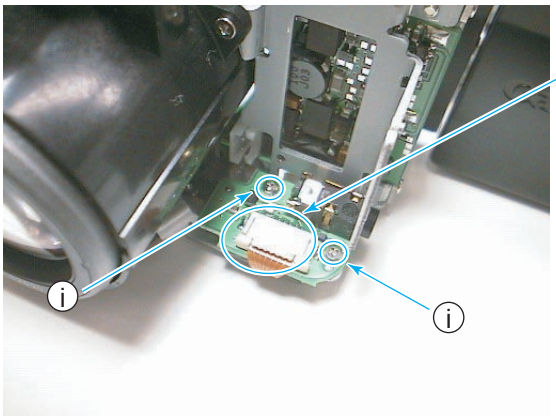


STEP5

Remove the FLASH/SPEAKER UNIT.

<Screw>
ⓘ : XA1-7170-307 (M1.7mm, L3.0mm)

2-3-7 JACK PCB ASS'Y



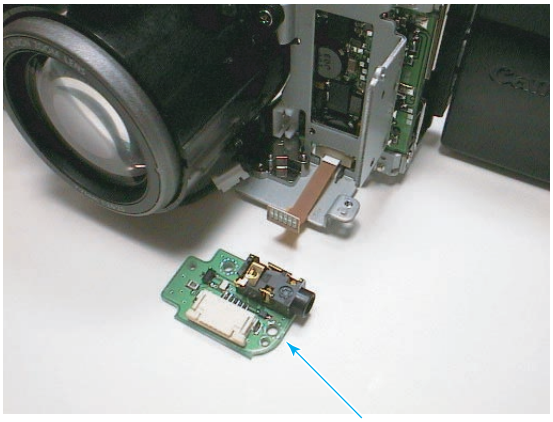
STEP1

Disconnect the flex.

STEP2

Remove the screws.

ⓘ X 2



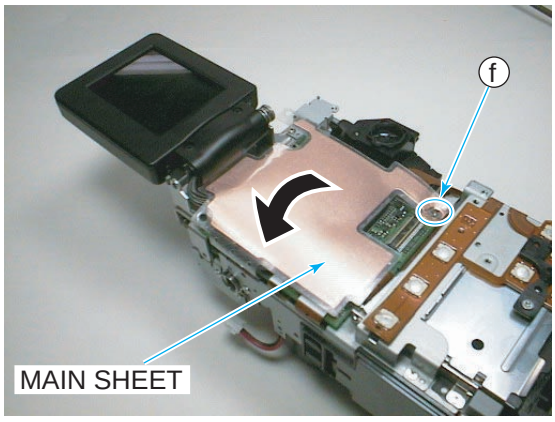
JACK PCB ASS'Y

STEP3

Remove the JACK PCB ASS'Y.

<Screw>

ⓘ : XA1-7170-307 (M1.7mm, L3.0mm)

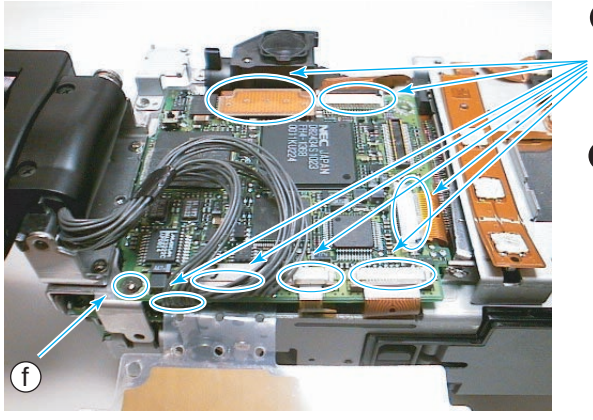


STEP1

Remove the screw.
ⓕ X 1

STEP2

Remove the MAIN SHEET.

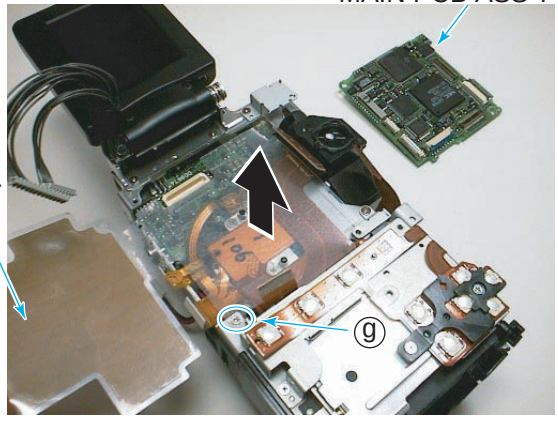


STEP3

Disconnect the cables and the flex.

STEP4

Remove the screw.
ⓕ X 1



STEP5

Remove the MAIN PCB ASS'Y.

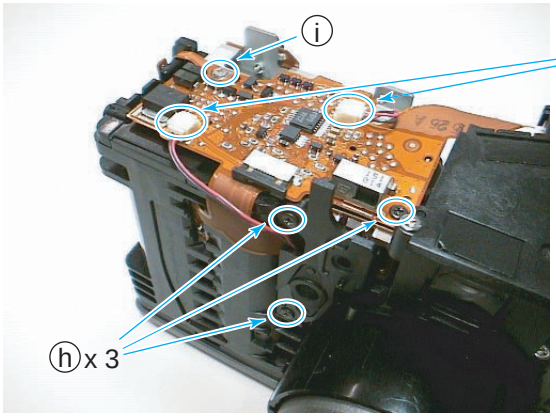
STEP6

Remove the screw.
ⓖ X 1

STEP7

Remove the MAIN SHEET.

<Screw>
ⓕ : FC2-8736-000 (M1.55mm, L2.5mm)
ⓖ : XA1-7170-167 (M1.7mm, L1.6mm)



STEP1

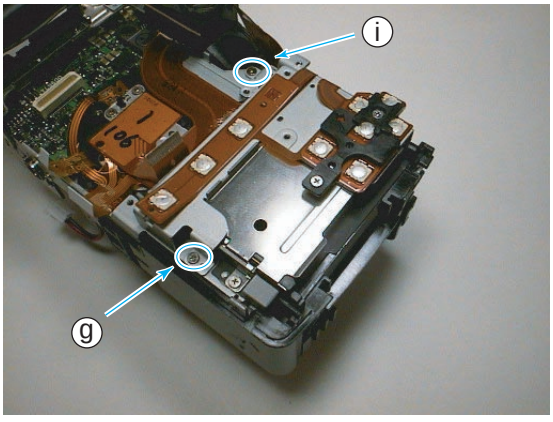
Disconnect the cables.

STEP2

Remove the screws.

ⓗ X 3

ⓘ X 1

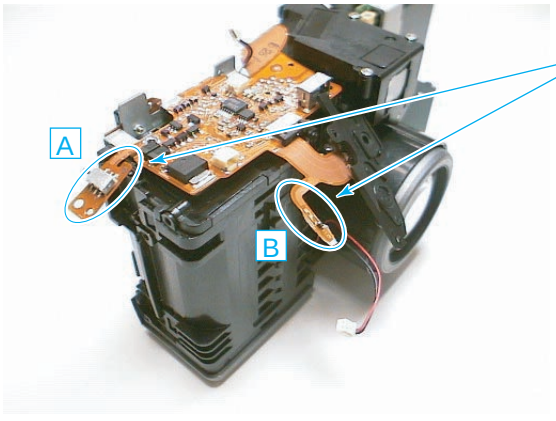


STEP3

Remove the screws.

ⓖ X 1

ⓘ X 1



STEP4

Disconnect the flex adhered by double-sided tape.

At Assembly

Affix double-sided tape to the rear side.

A : 5mm x 5mm

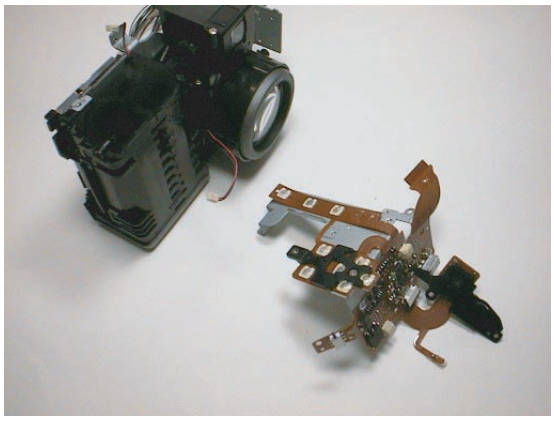
B : 2mm x 5mm

<Screw>

ⓖ : XA1-7170-167 (M1.7mm, L1.6mm)

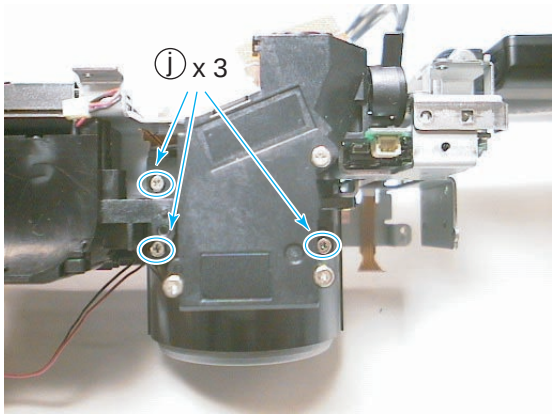
ⓗ : XA4-9170-359 (M1.7mm, L3.5mm, Self-Tap, Black)

ⓘ : XA1-7170-307 (M1.7mm, L3.0mm)



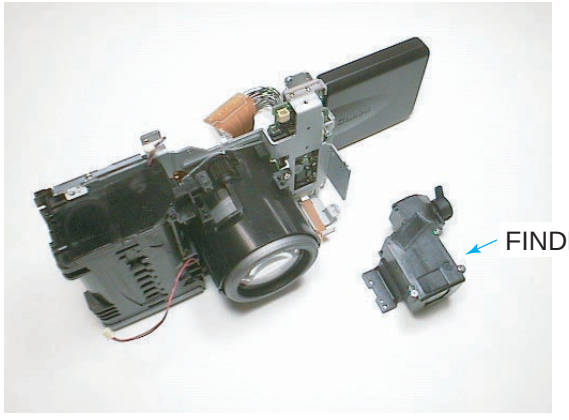
STEP5

Remove the REAR PLATE UNIT.



STEP1

Remove the screws.
ⓙ X 3



STEP2

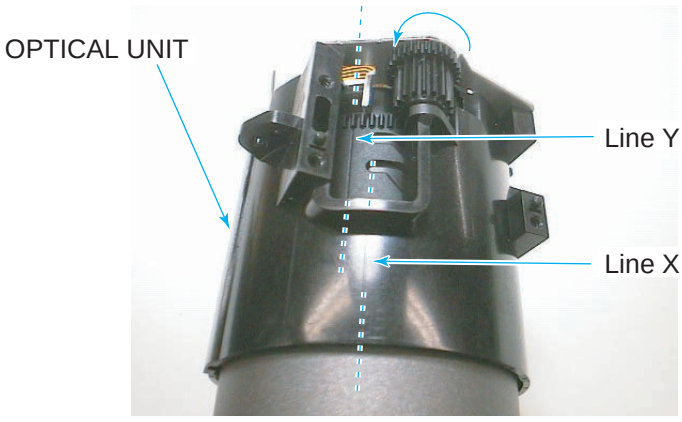
Remove the FINDER UNIT.

At Assembly

For details on how to assemble the FINDER UNIT and OPTICAL UNIT, see the following page.

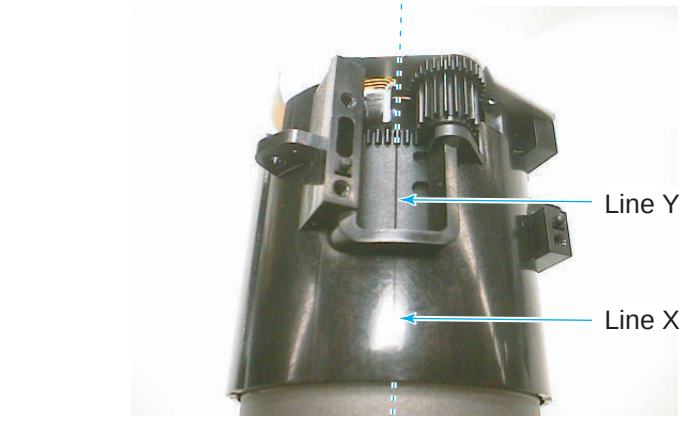
<Screw>
ⓙ : XA4-9170-407 (M1.7mm, L4.0mm, Self-Tap)

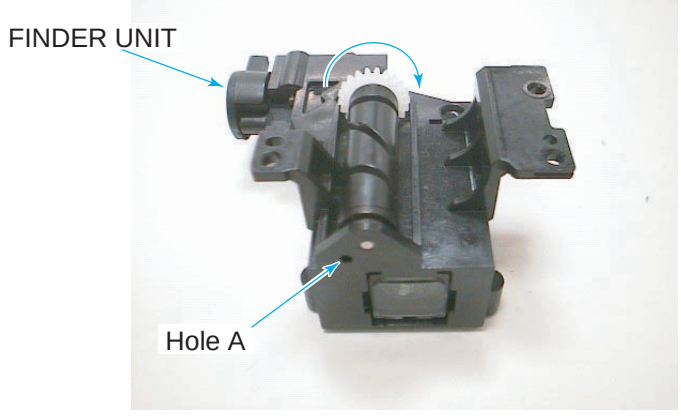
Assembling the FINDER UNIT and OPTICAL UNIT



STEP1

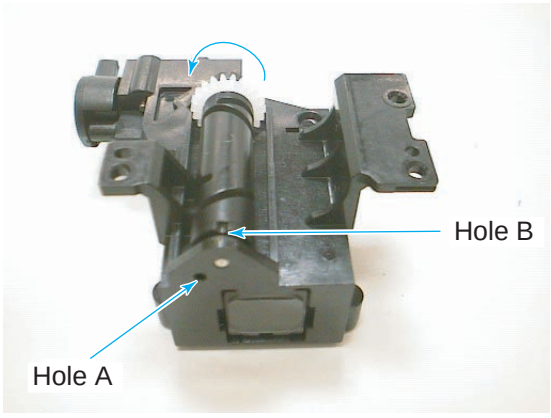
Rotate the gear with your finger, and align line X on the lens barrel with line Y on the cam ring.





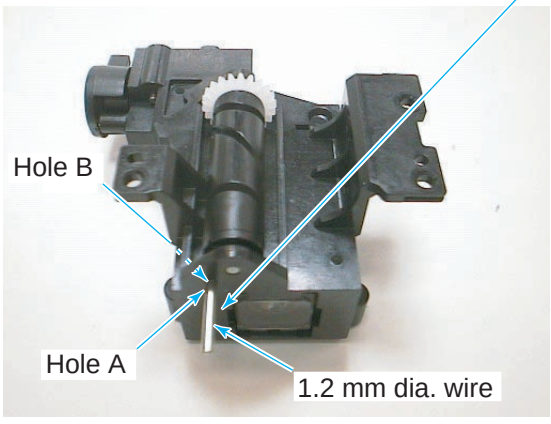
STEP2

Rotate the gear with your finger in the direction of the arrow to the limit.



STEP3

Rotate the gear by about 7/8 of a turn from the state in STEP 2 to align holes A and B.

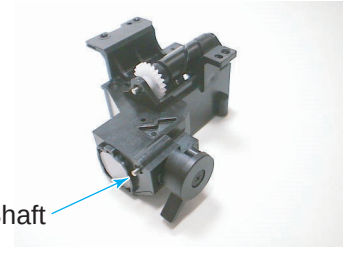


STEP4

Pass the 1.2 mm dia. wire through holes A and B to lock the gear.
* During this operation, look through the FINDER to make sure that the lens is at the WIDE end.

<If you do not have 1.2 mm dia. wire>

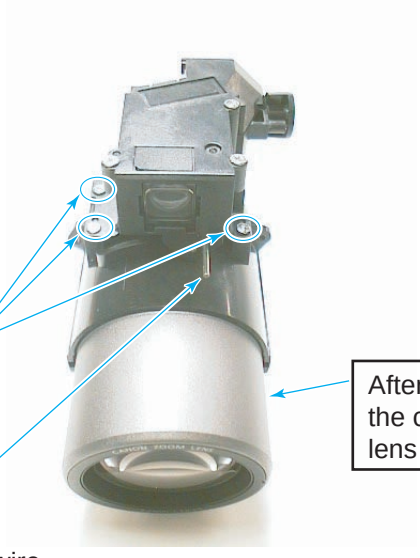
Another FINDER UNIT



Remove the shaft (1.2 mm dia.) from another FINDER UNIT for use instead of the wire. Once the shaft is removed from a FINDER UNIT, that FINDER UNIT cannot be used.

STEP5

Assemble the FINDER UNIT onto the OPTICAL UNIT.



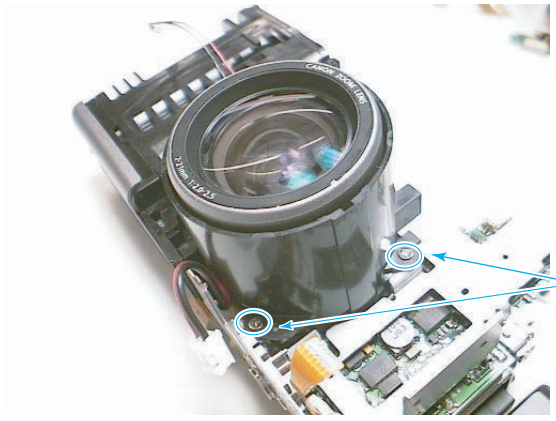
STEP6

Tighten these screws.

After the camera is completely assembled, turn the camera ON and OFF to retract the protruded lens barrel into the camera.

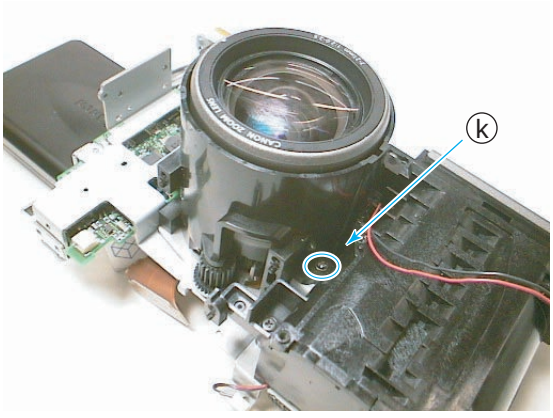
STEP7

Draw out the wire.



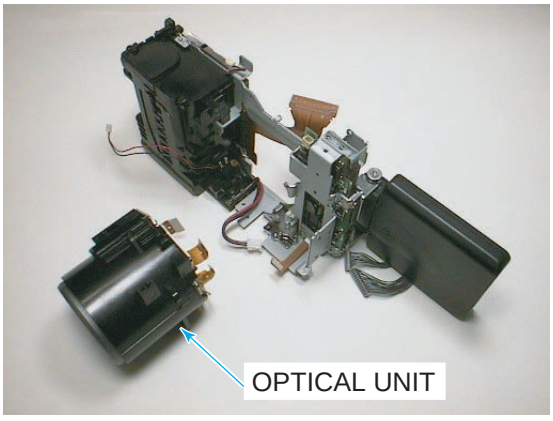
STEP1

Remove the screws.
ⓚ X 2



STEP2

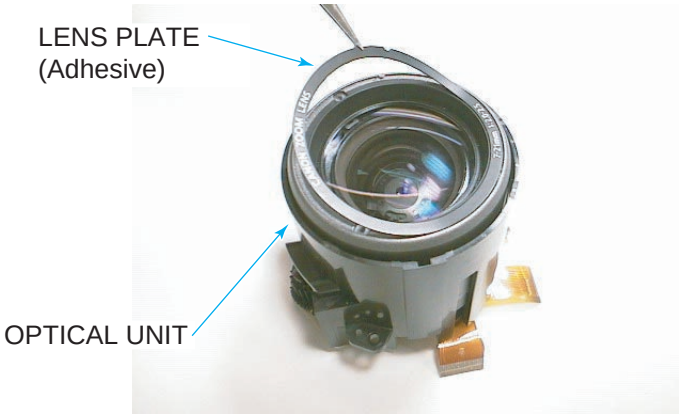
Remove the screws.
ⓚ X 1



STEP3

Remove the OPTICAL UNIT.

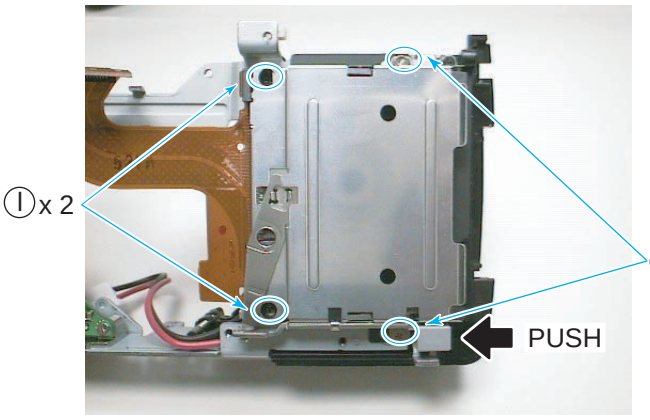
<Screw>
ⓚ : XA1-7170-407 (M1.7mm, L4.0mm)



STEP4

Remove the LENS PLATE.

2-3-12 CF UNIT

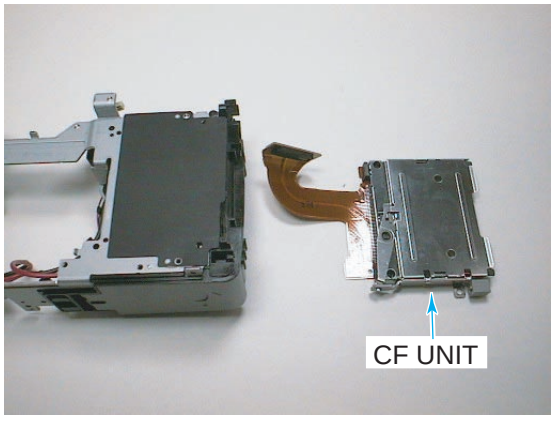


STEP1

Remove the screws.

ⓖ X 2

ⓛ X 2



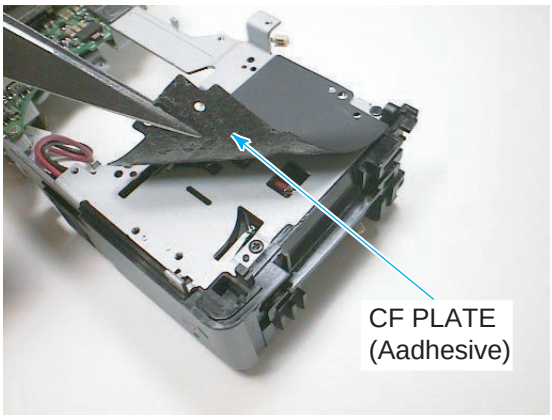
STEP2

Remove the CF UNIT.

<Screw>

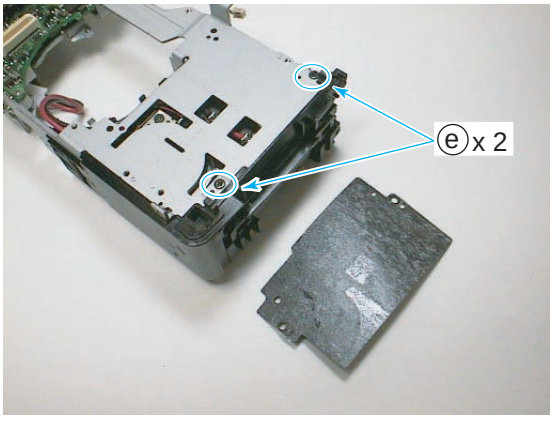
ⓖ : XA1-7170-167 (M1.7mm, L1.6mm)

ⓛ : XA4-9170-609 (M1.7mm, L6.0mm, Self-Tap, Black)



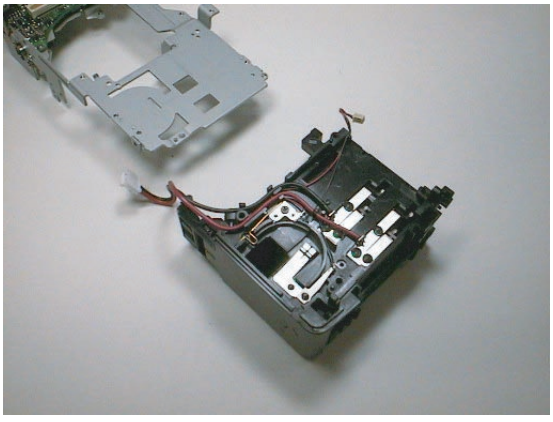
STEP1

Remove the CF PLATE.



STEP2

Remove the screws.
ⓔ X 2

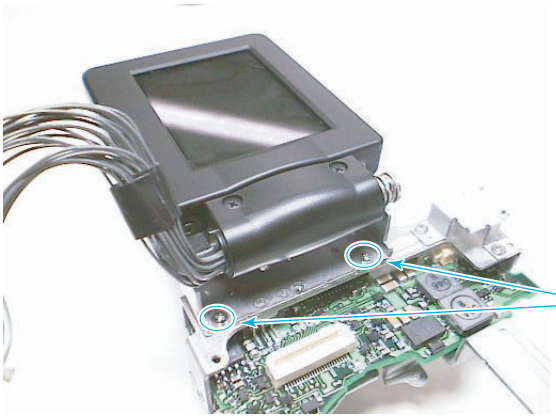


STEP3

Remove the BATTERY BOX UNIT.

<Screw>
ⓔ : XA4-9170-409 (M1.7mm, L4.0mm, Self-Tap, Black)

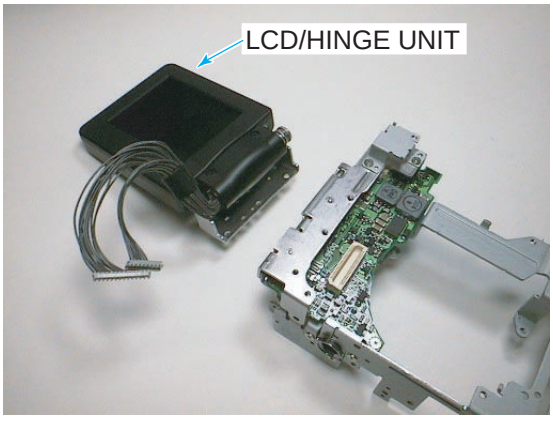
2-3-14 LCD/HINGE UNIT



STEP1

Remove the screws.

ⓘ X 2



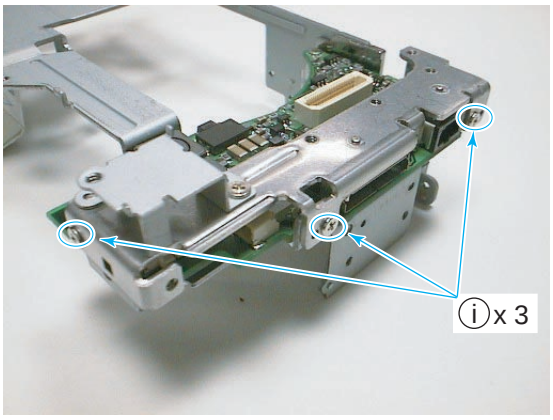
STEP2

Remove the LCD/HINGE UNIT.

<Screw>

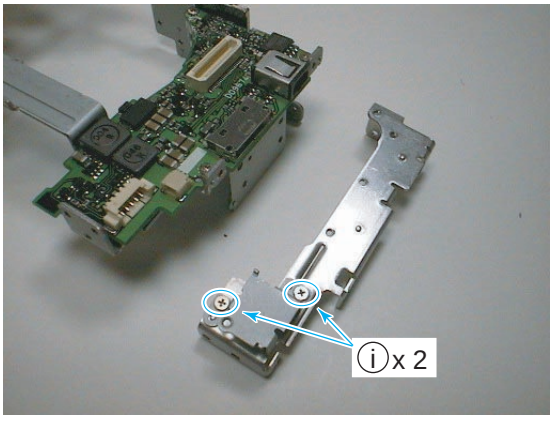
ⓘ : XA1-7170-307 (M1.7mm, L3.0mm)

2-3-15 SUB FRAME



STEP1

Remove the screws.
ⓘ X 3

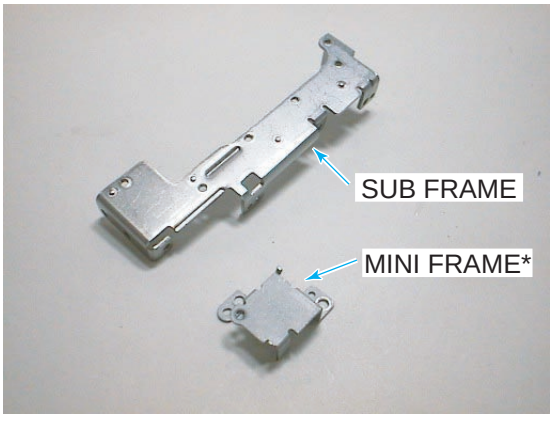


STEP2

Remove the SUB FRAME.

STEP3

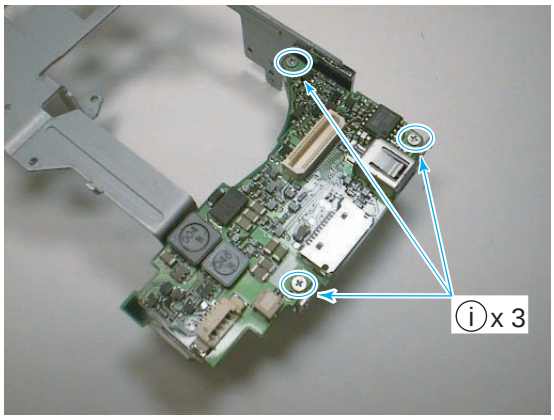
Remove the screws.
ⓘ X 2



* The MINI FRAME is not included in the SUB FRAME (CD1-3253-000).

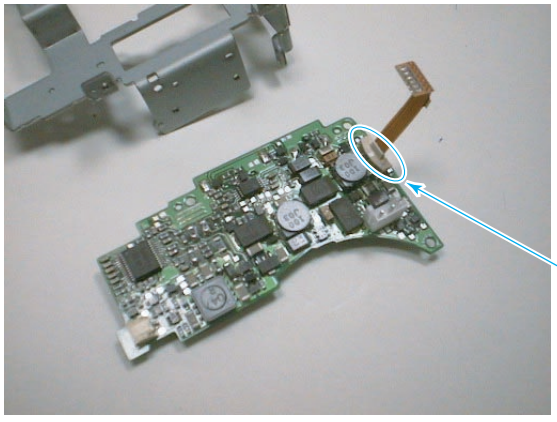
<Screw>
ⓘ : XA1-7170-307 (M1.7mm, L3.0mm)

2-3-16 DC/DC CONVERTER PCB ASS'Y



STEP1

Remove the screws.
ⓘ X 3

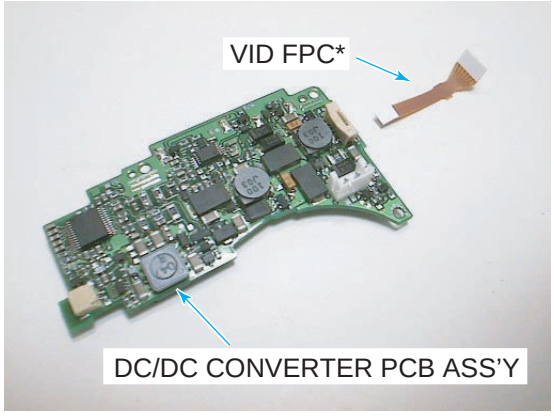


STEP2

Remove the DC/DC CONVERTER PCB ASS'Y.

STEP3

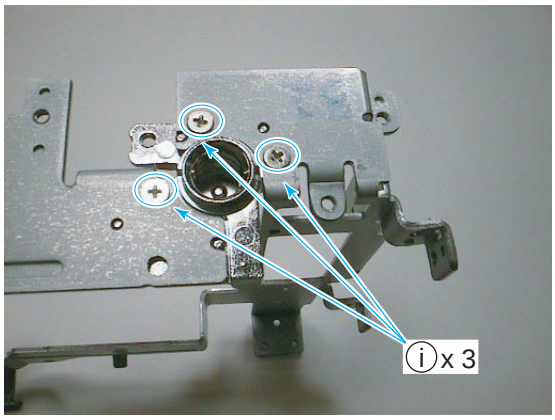
Remove the VID FPC.



* The VID FPC is not included in the DC/DC CONVERTER PCB ASS'Y (CM1-1076-000).

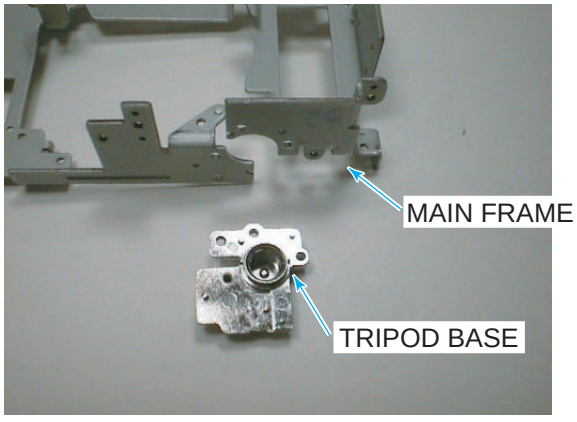
<Screw>
ⓘ : XA1-7170-307 (M1.7mm, L3.0mm)

2-3-17 TRIPOD BASE



STEP1

Remove the screws.
ⓘ X 3



STEP2

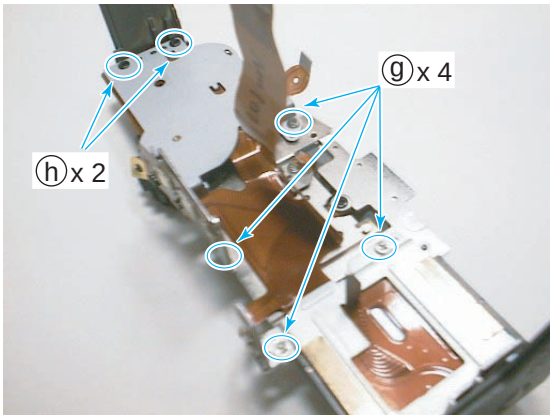
Remove the TRIPOD BASE.

<Screw>
ⓘ : XA1-7170-307 (M1.7mm, L3.0mm)

2-4 Disassembly of Main Units

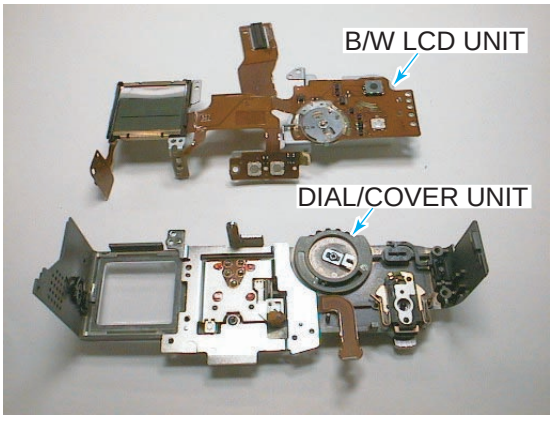
2-4-1 TOP UNIT

2-4-1-1 Disassembling the B/W LCD UNIT and DIAL/COVER UNIT



STEP1

Remove the screws.
ⓖ X 4
ⓗ X 2

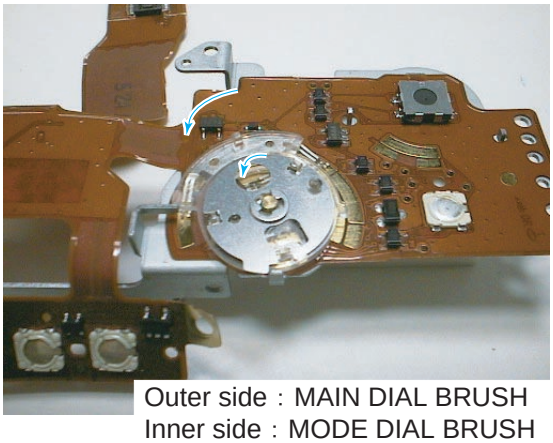


STEP2

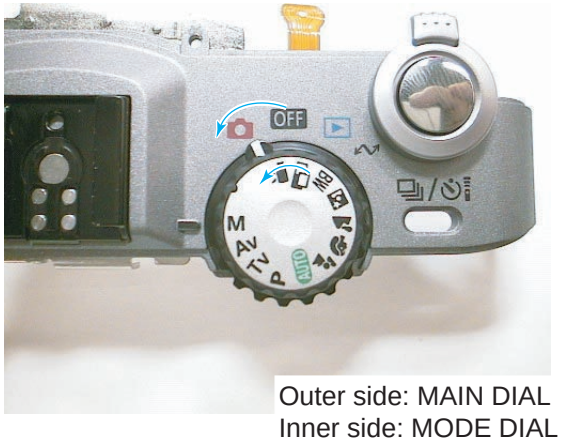
Disassemble the DIAL/COVER UNIT and B/W LCD UNIT.

At Assembly

The DIAL/COVER UNIT and B/W LCD UNIT must be assembled with the MAIN DIAL BRUSH, MODE DIAL BRUSH, MAIN DIAL and MODE DIAL rotated in the direction of the arrows to the limit.



Outer side : MAIN DIAL BRUSH
Inner side : MODE DIAL BRUSH

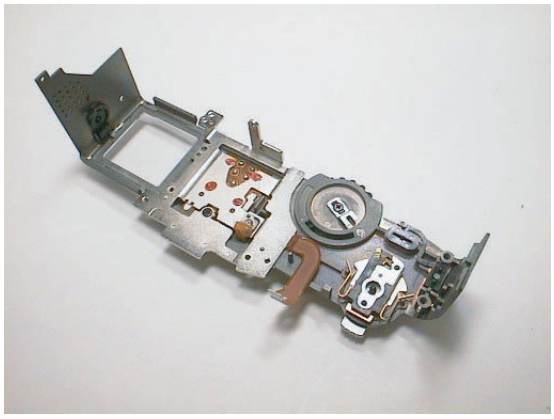


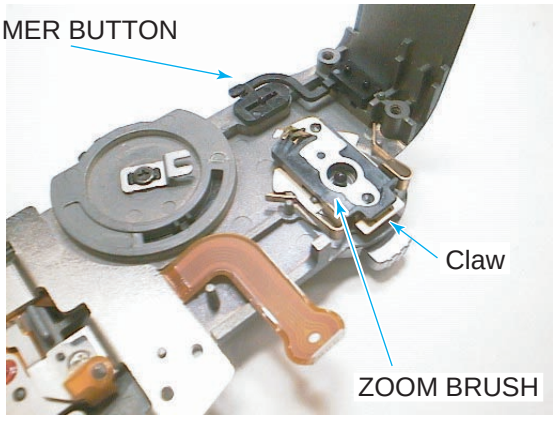
Outer side: MAIN DIAL
Inner side: MODE DIAL

<Screw>
ⓖ : XA1-7170-167 (M1.7mm, L1.6mm)
ⓗ : XA4-9170-359 (M1.7mm, L3.5mm, Self-Tap, Black)

2-4-1-2 DIAL/COVER UNIT

1) ZOOM LEVER etc.



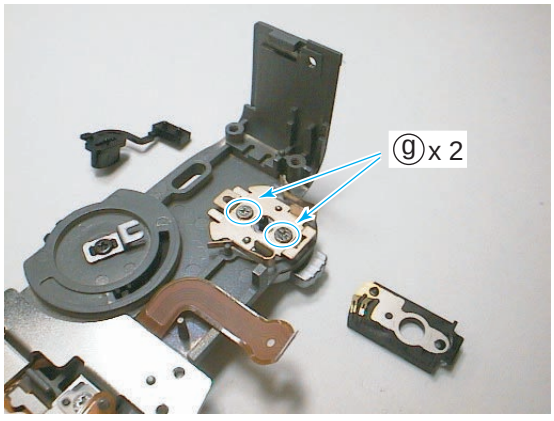


STEP1

Remove the SELF TIMER BUTTON.

STEP2

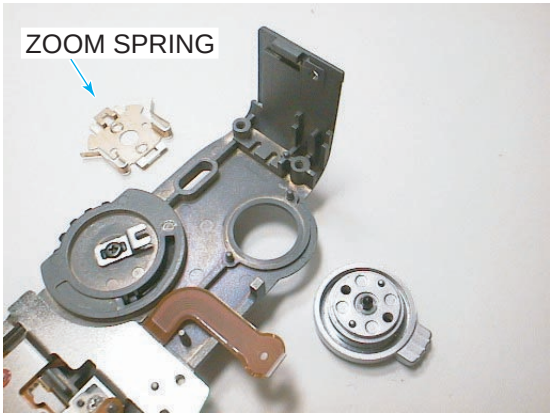
Remove the ZOOM BRUSH.



STEP3

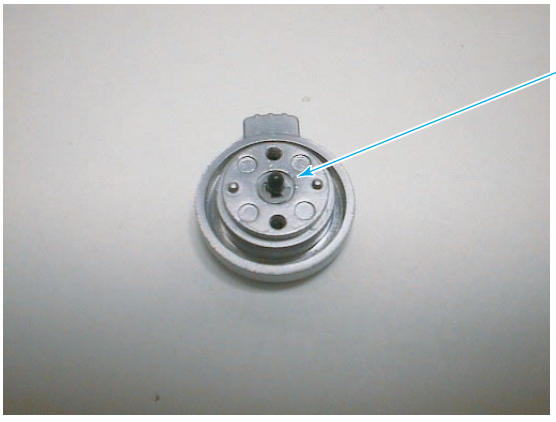
Remove the screws.
ⓖ X 2

<Screw>
ⓖ : XA1-7170-167 (M1.7mm, L1.6mm)



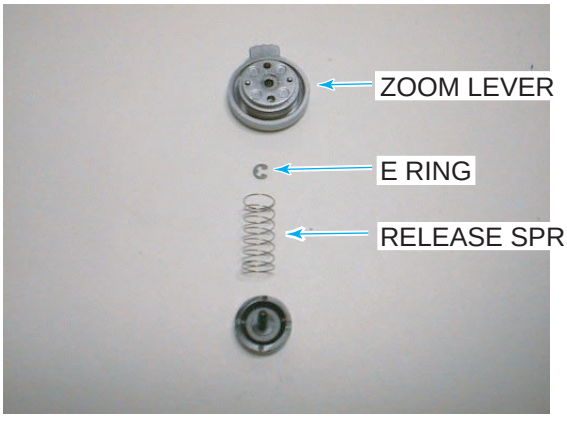
STEP4

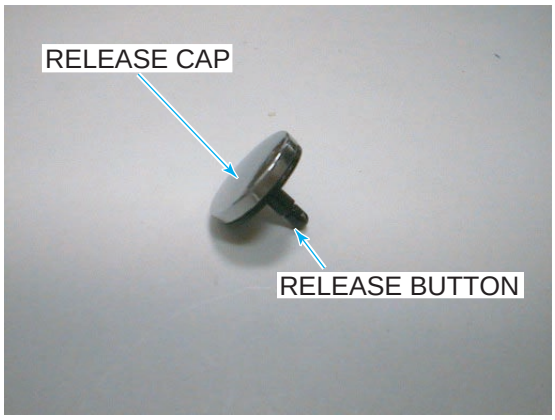
Remove the ZOOM SPRING.



STEP5

Remove the E RING.

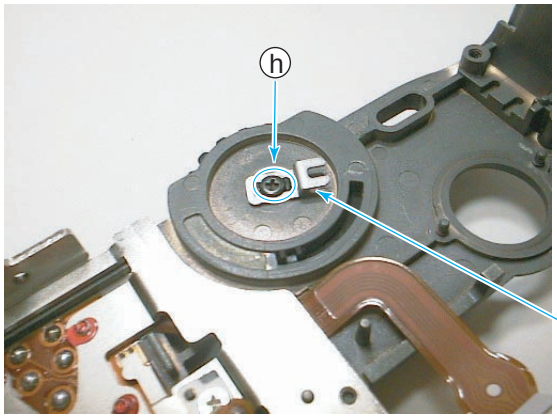




At Assembly

Glue with DIA BOND.

2) MODE DIAL etc.



STEP1

Remove the screw.

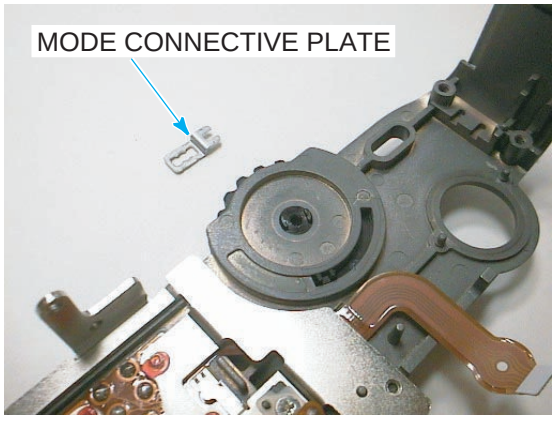
ⓗ X 1

STEP2

Remove the MODE CONNECTIVE PLATE.

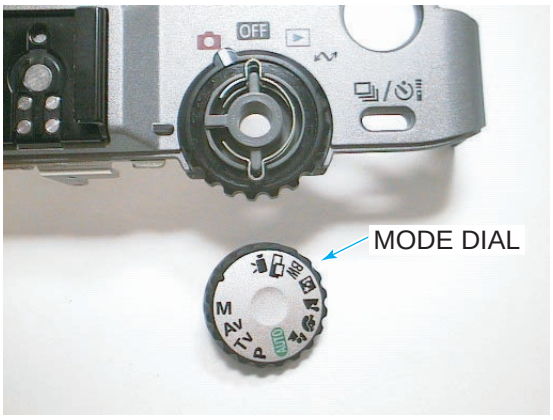
At Assembly

Set the MODE DIAL to “ M ” and attach the MODE CONNECTIVE PLATE at the position shown in the photograph on the left.



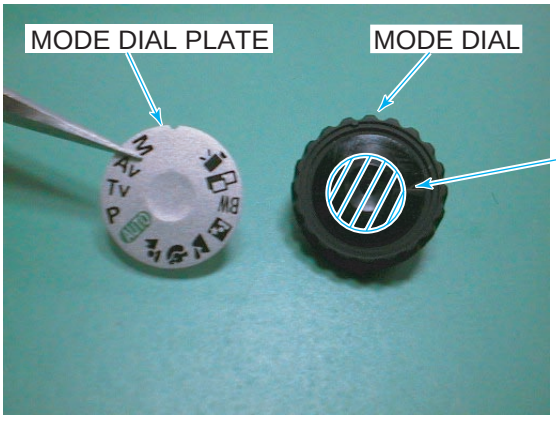
<Screw>

ⓗ : XA4-9170-359 (M1.7mm, L3.5mm, Self-Tap, Black)



STEP3

Remove the MODE DIAL.



At Assembly

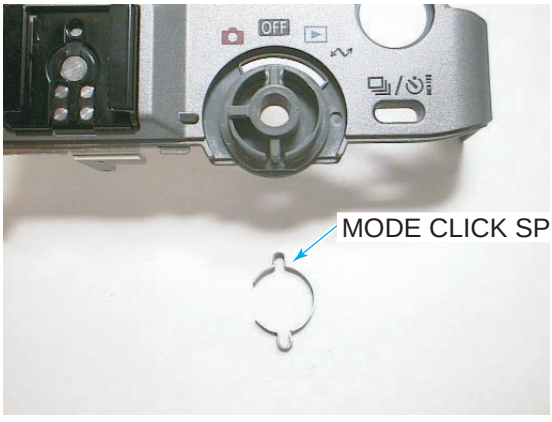
Apply a coat of DIA BOND.

STEP4

Remove the MODE CLICK SPRING.

STEP5

Remove the MAIN DIAL.



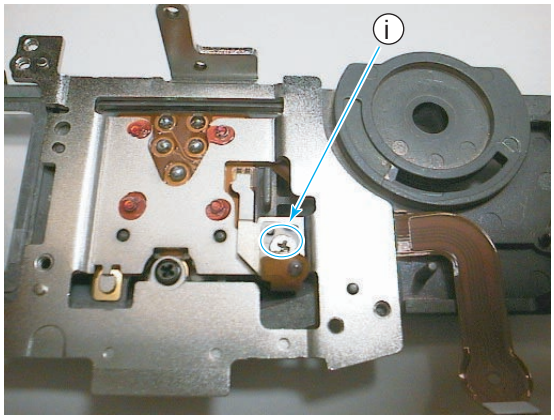
STEP6

Remove the MODE CLICK SPRING.

At Assembly

Apply a coat of LOGENEST LAMBDA A-74 to the sliding surfaces of the MODE DIAL and MAIN DIAL.

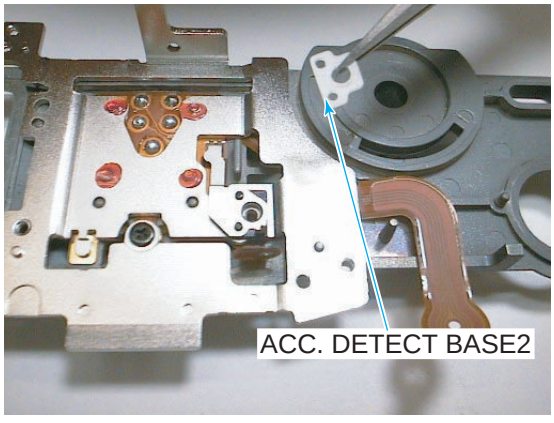
3) ACC. SHOE etc.



STEP1

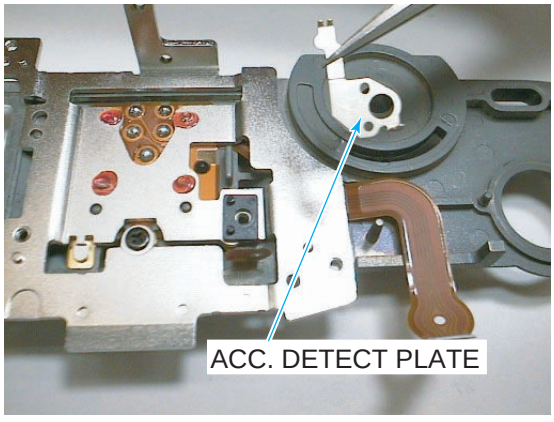
Remove the screw.

ⓘ X 1



STEP2

Remove the ACC. DETECT BASE2.

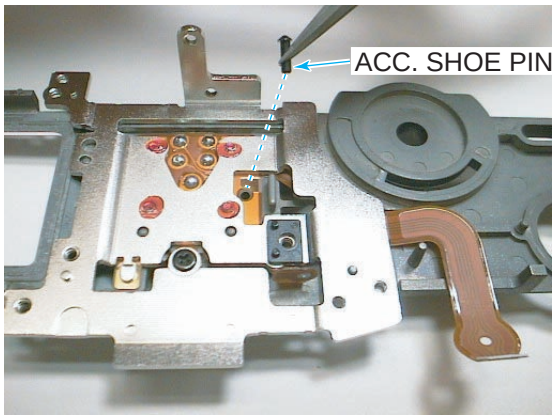


STEP3

Remove the ACC. DETECT PLATE.

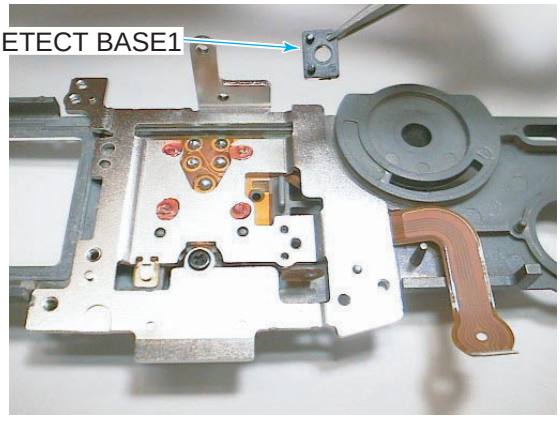
<Screw>

ⓘ : XA1-7170-307 (M1.7mm, L3.0mm)



STEP4

Remove the ACC. SHOE PIN.



STEP5

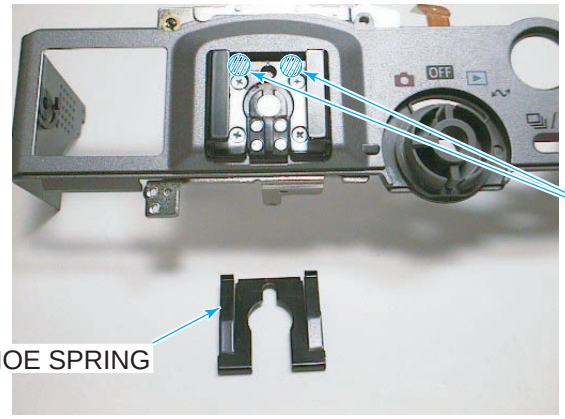
Remove the ACC. DETECT BASE1.

STEP6

Insert tweezers under the ACC. SHOE SPRING.

Warning !

Take care not to scratch parts.

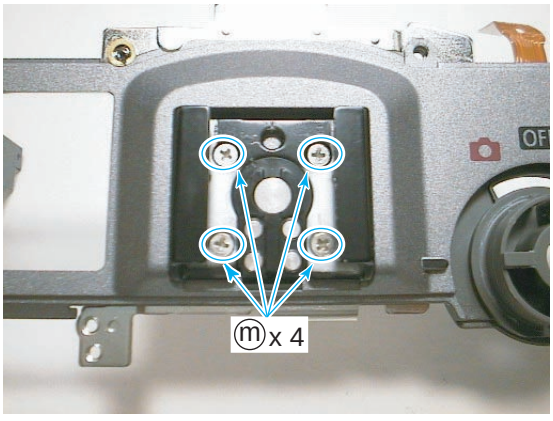


STEP7

Remove the ACC. SHOE SPRING.

At Assembly

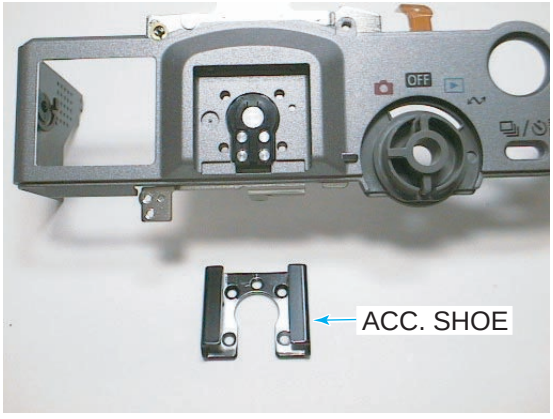
Apply a coat of DIA BOND.



STEP8

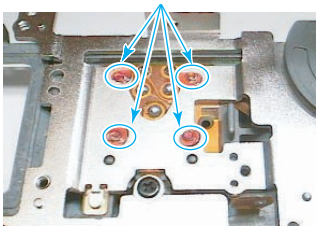
Remove the screws.

ⓜ X 4



At Assembly

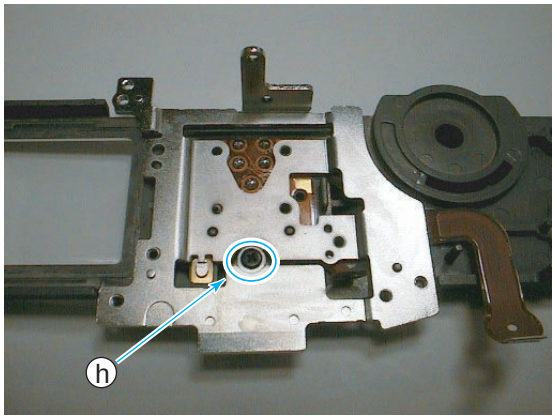
After tightening the screws, apply a coat of THREE BOND 1401C to these screws.



<Screw>

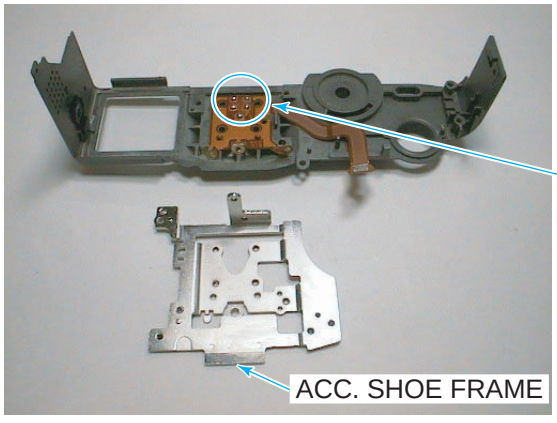
ⓜ : XA1-3170-407 (M1.7mm, L4.0mm)

4) ACC. SHOE FPC etc.



STEP9

Remove the screw.
ⓗ X 1

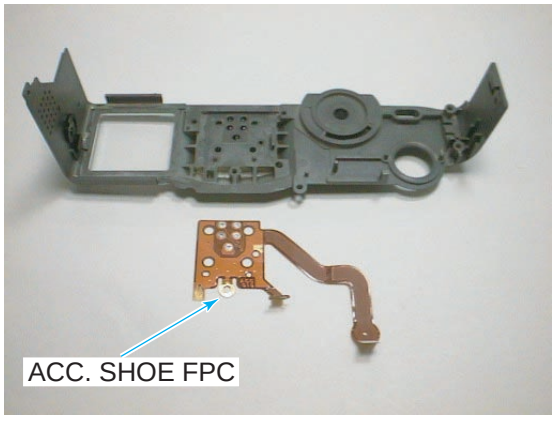


STEP10

Remove the ACC. SHOE FRAME.

STEP11

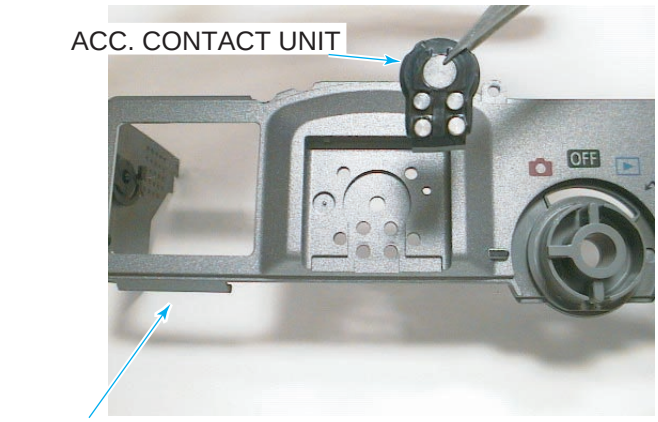
Remove the solder.



STEP12

Remove the ACC. SHOE FPC.

<Screw>
ⓗ : XA4-9170-359 (M1.7mm, L3.5mm, Self-Tap, Black)

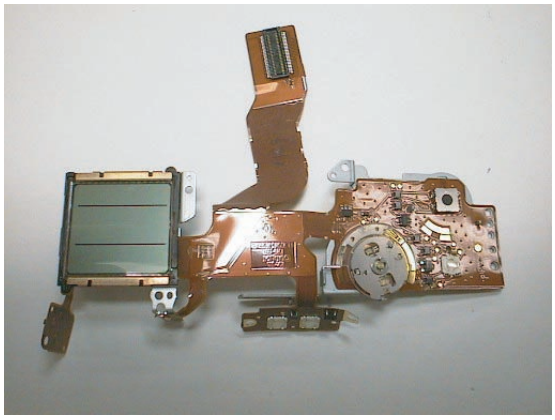


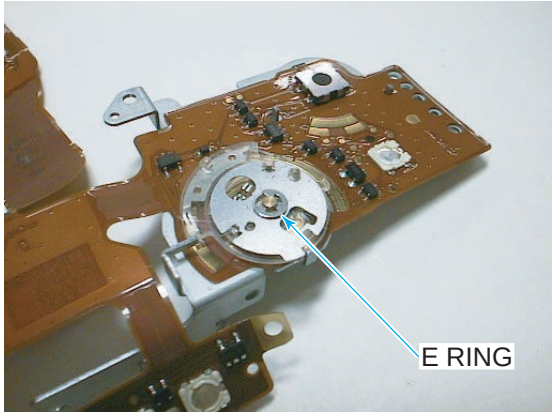
STEP13

Remove the ACC. CONTACT UNIT.

2-4-1-3 B/W LCD UNIT

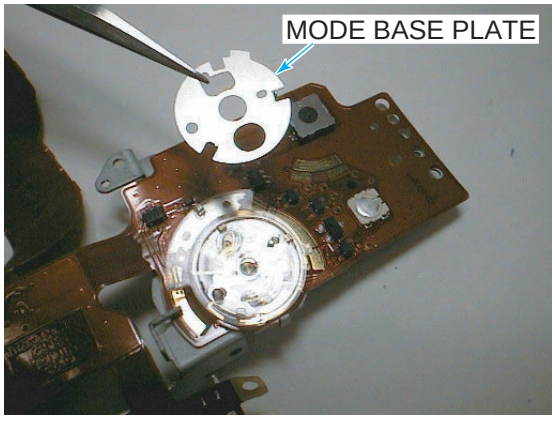
1) MAIN DIAL BRUSH etc.





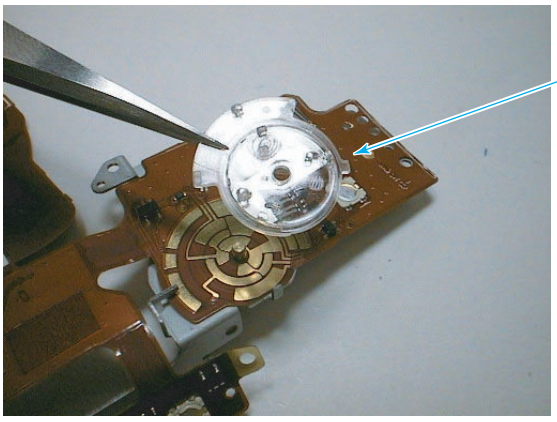
STEP1

Remove the E RING.



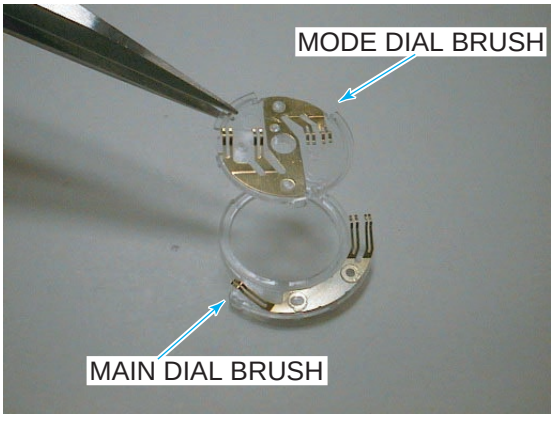
STEP2

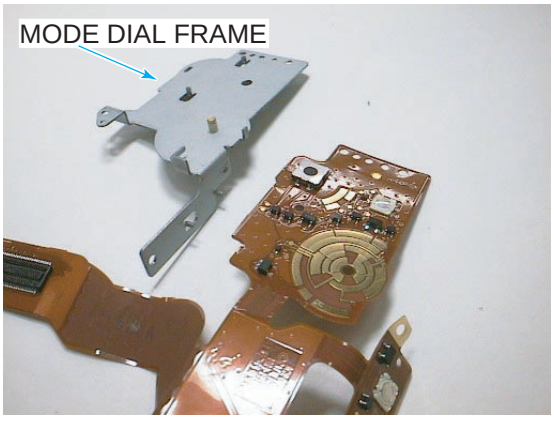
Remove the MODE BASE PLATE.



STEP3

Remove the MAIN DIAL BRUSH and MODE DIAL BRUSH.

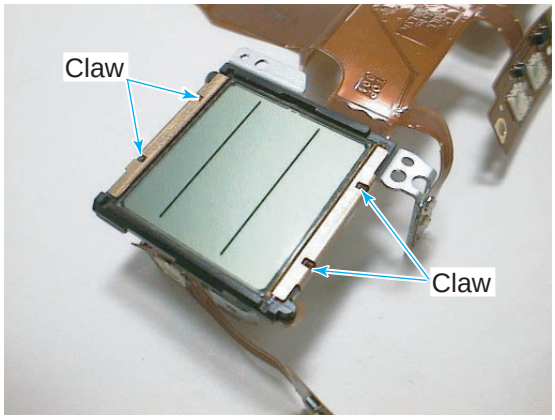




STEP4

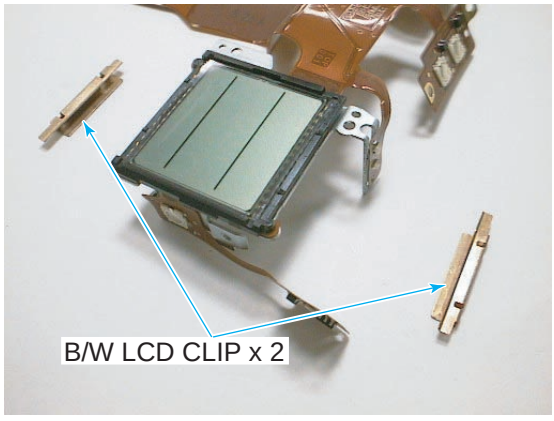
Remove the MODE DIAL FRAME.

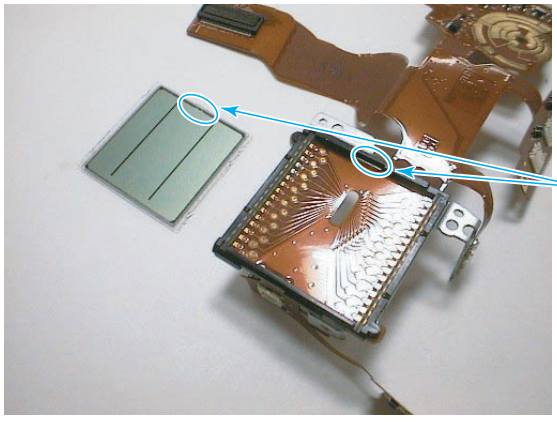
2) B/W LCD PANEL etc.



STEP1

Remove the two B/W LCD CLIPs.



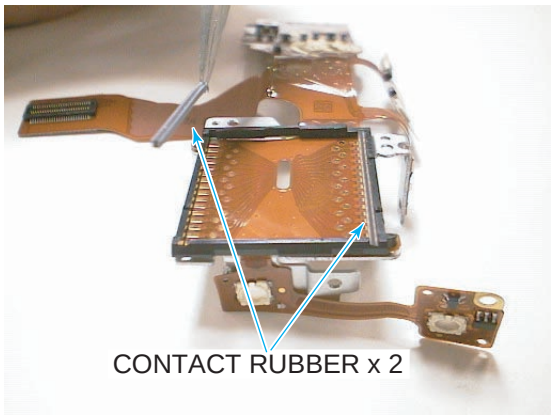


STEP2

Remove the B/W LCD PANEL.

At Assembly

Align the protruding section on the B/W LCD PANEL with the indent on the B/W LCD HOLDER.

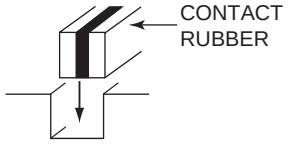


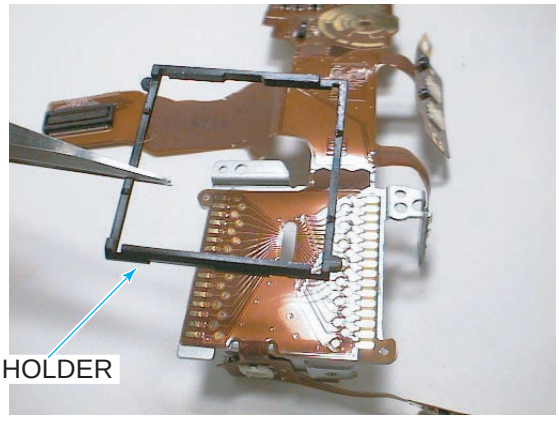
STEP3

Remove the two CONTACT RUBBERs.

At Assembly

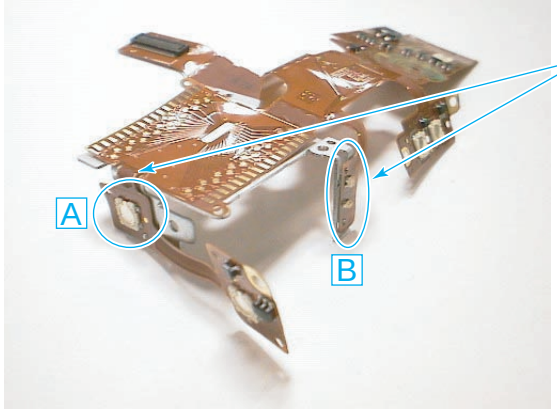
CONTACT RUBBER direction





STEP4

Remove the B/W LCD HOLDER.



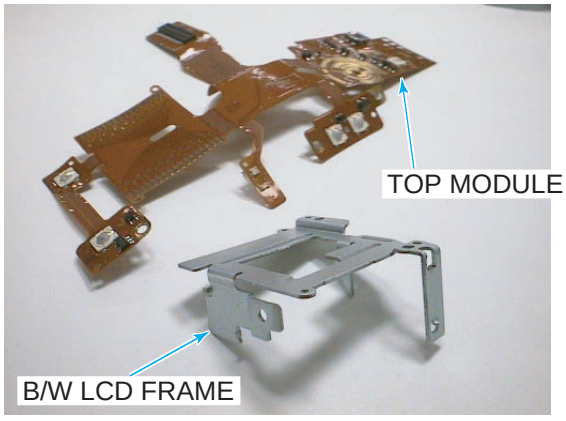
STEP5

Remove the sections adhered by double-sided tape.

At Assembly

Affix double-sided tape to the rear side.

A : 5mm x 5mm
B : 3mm x 5mm

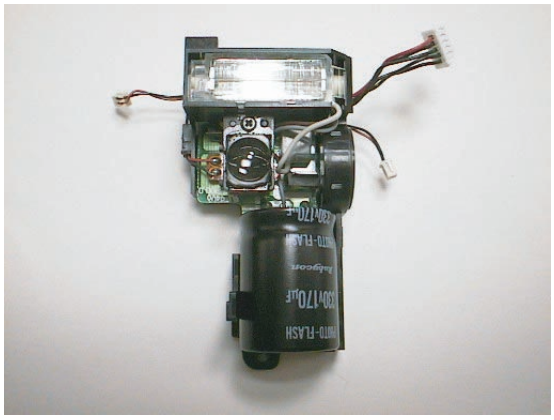


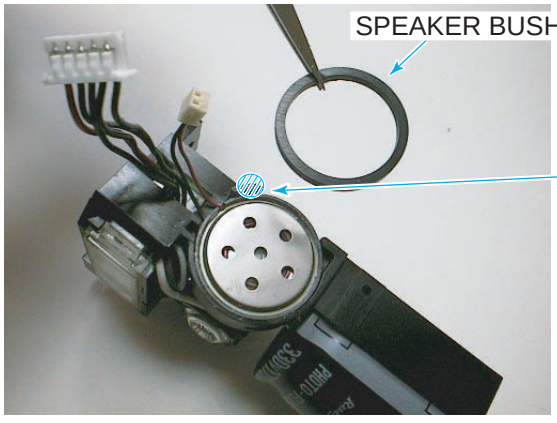
STEP6

Remove the TOP MODULE UNIT.

2-4-2 FLASH/SPEAKER UNIT

1) SPEAKER UNIT etc.



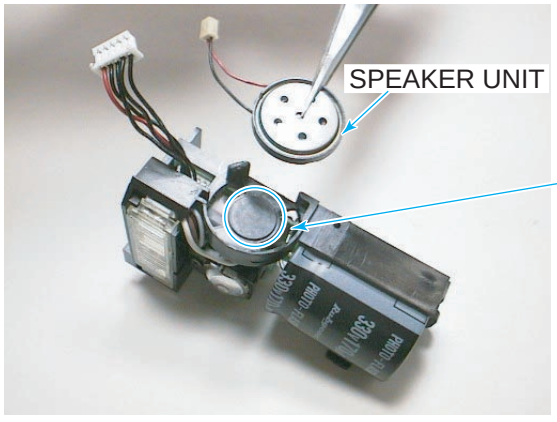


STEP1

Remove the SPEAKER BUSH.

At Assembly

Apply a coat of DIA BOND.



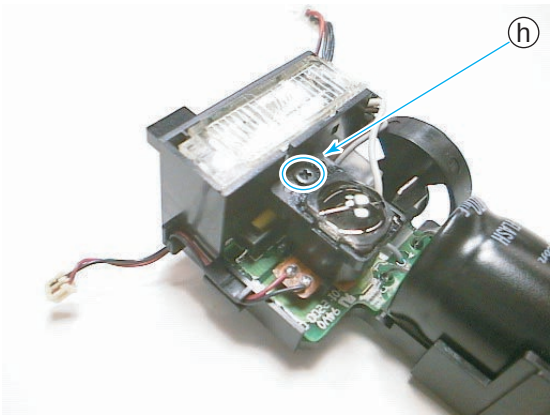
STEP2

Remove the SPEAKER UNIT.

At Assembly

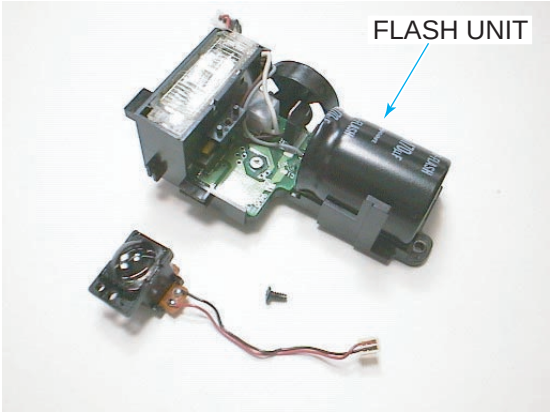
Cut the double-sided tape to the following dimension for use.
5mm x 5mm

2) AF LED FPC etc.

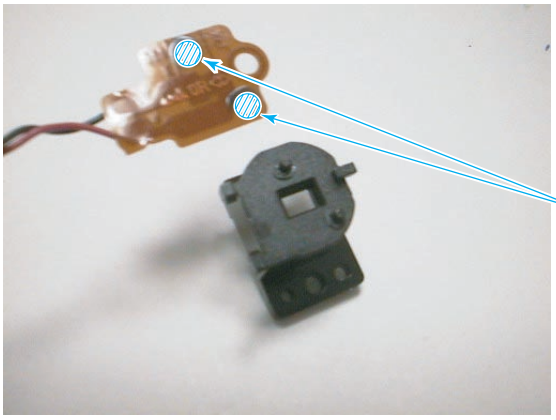


STEP1

Remove the screw.
ⓗ X 1



STEP2



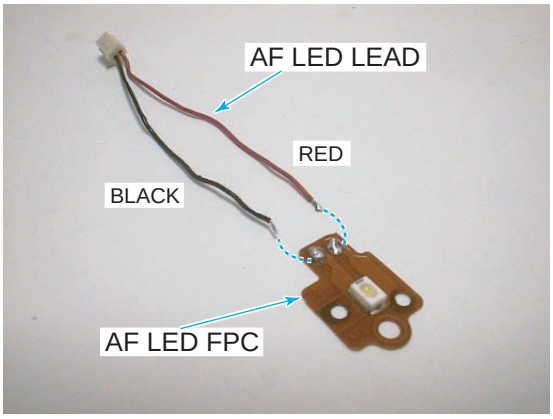
STEP3

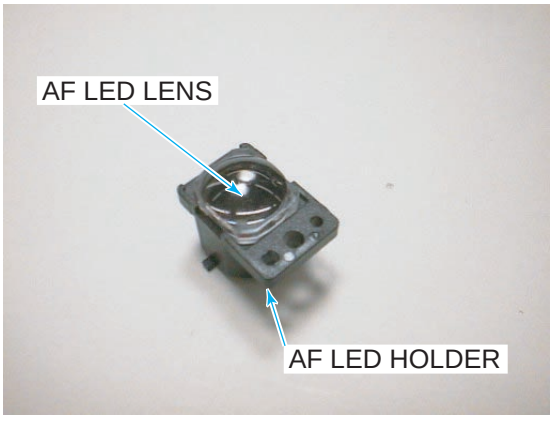
Disconnect the flex section.

At Assembly

Apply a coat of DIA BOND.

<Screw>
ⓗ : XA4-9170-359 (M1.7mm, L3.5mm, Self-Tap, Black)



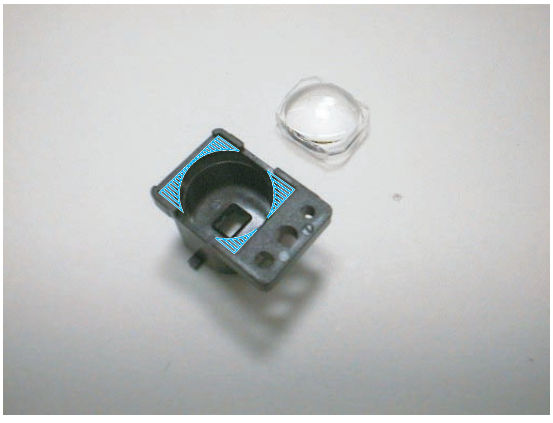


STEP4

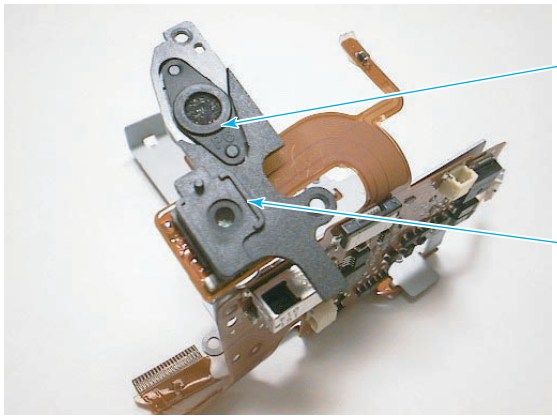
Remove the solder from the cables.

At Assembly

Apply a coat SEMEDYNE SUPER X to the part indicated [//////////].



2-4-3 REAR PLATE UNIT

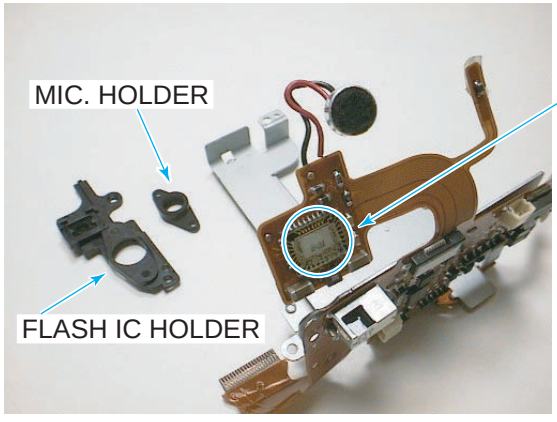


STEP1

Remove the MIC. HOLDER.

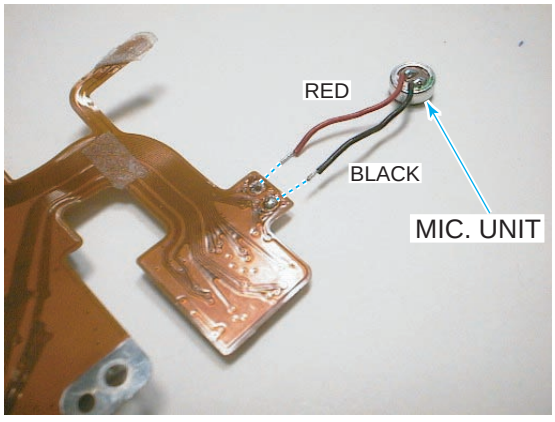
STEP2

Remove the FLASH IC HOLDER.



At Assembly

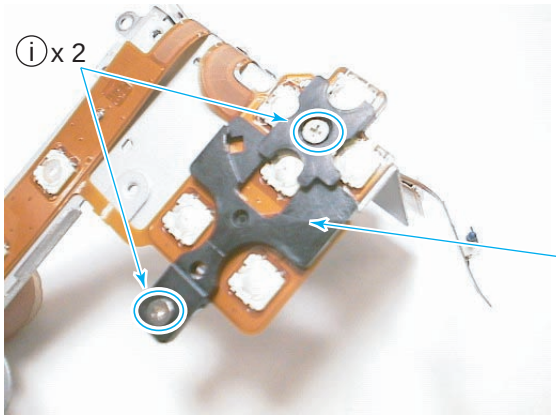
Cut the double-sided tape to the following dimension for use.
5mm x 5mm



STEP3

Remove the solder from the cables.

2) BUTTON PCB ASS'Y

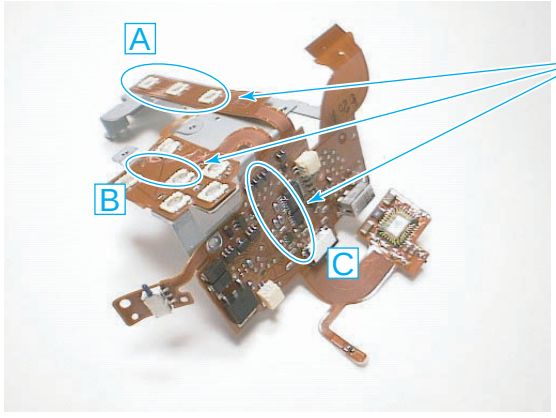


STEP1

Remove the screws.
ⓘ X 2

STEP2

Remove the SEL. BUTTON BASE.

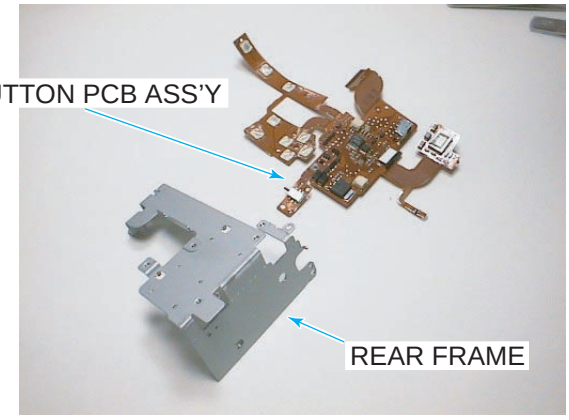


STEP3

Remove the sections adhered by double-sided tape.

At Assembly

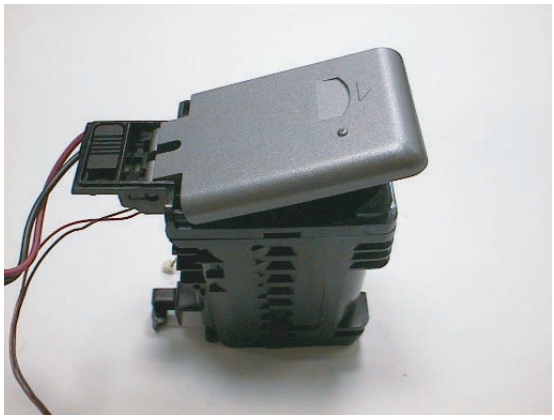
Affix double-sided tape to the rear side.
A : 5mm x 10mm
B : 5mm x 10mm
C : 5mm x 10mm



<Screw>
ⓘ : XA1-7170-307 (M1.7mm, L3.0mm)

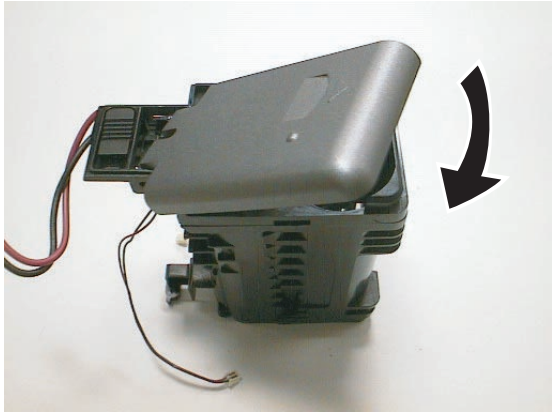
2-4-4 BATTERY BOX UNIT

1) BATTERY COVER



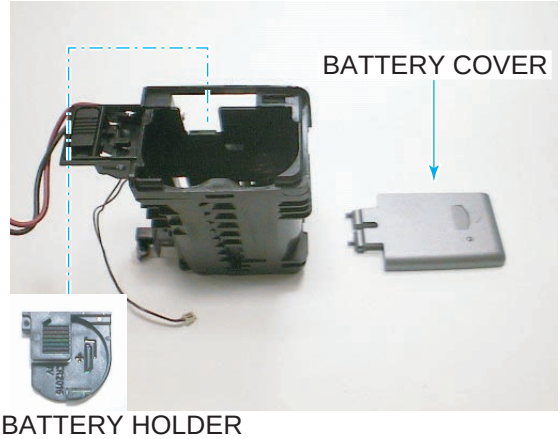
STEP1

Open the BATTERY COVER.



STEP2

Rotate the BATTERY COVER to the side.

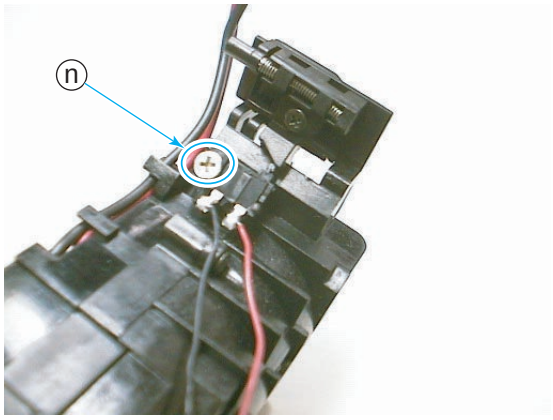


DATE BATTERY HOLDER

STEP3

Remove the BATTERY COVER.

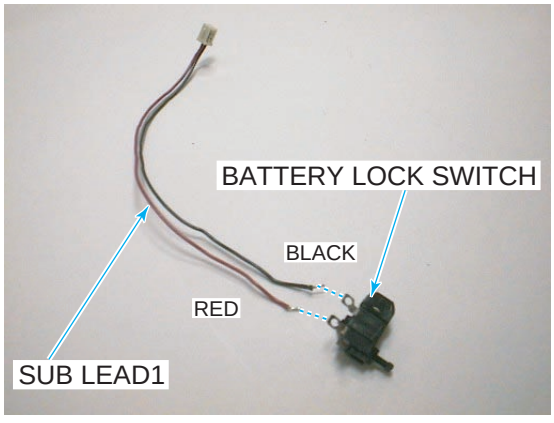
2) BATTERY LOCK SWITCH etc.



STEP1

Remove the screw.

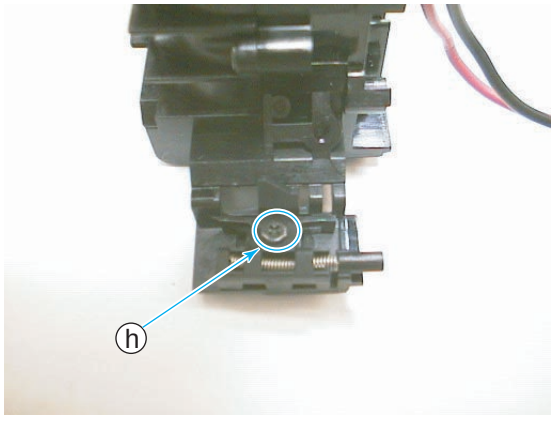
ⓝ X 1



STEP2

Remove the solder from the cables.

3) BATTERY LOCK OPENER etc.



STEP1

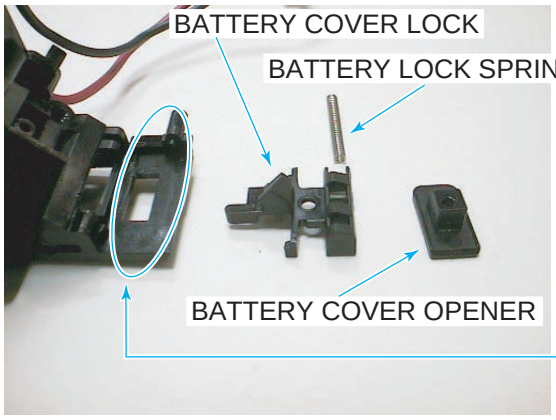
Remove the screw.

ⓗ X 1

<Screw>

ⓗ : XA4-9170-359 (M1.7mm, L3.5mm, Self-Tap, Black)

ⓝ : XA4-9200-657 (M2.0mm, L6.5mm, Self-Tap)



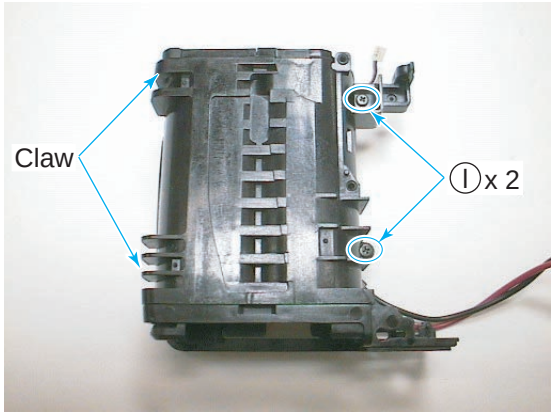
STEP2

Remove each of the parts.

At Assembly

Apply a coat of LOGENEST LAMBDA A-74 to the sliding surfaces.

4) BATTERY EJECT SPRING etc.

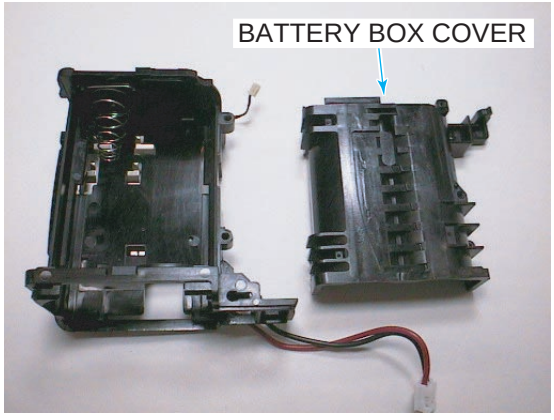


STEP1

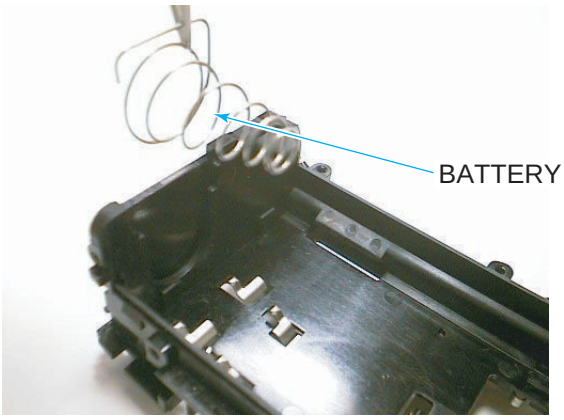
Remove the screws.
Ⓘ X 2

STEP2

Remove the BATTERY BOX COVER.



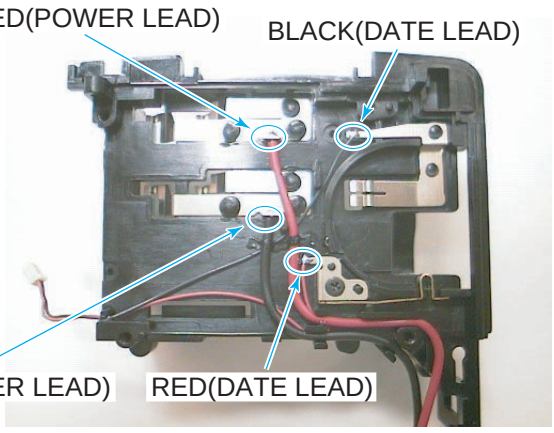
<Screw>
Ⓘ : XA4-9170-609 (M1.7mm, L6.0mm, Self-Tap, Black)



STEP3

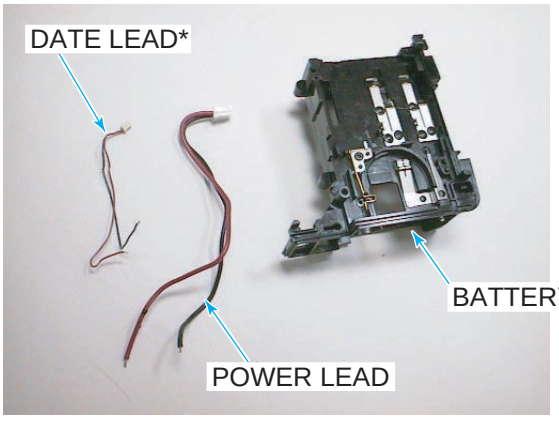
Remove the BATTERY EJECT SPRING.

5) POWER LEAD etc.

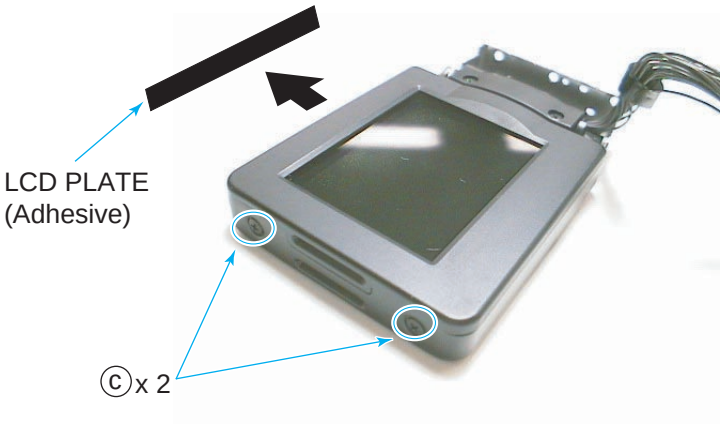


STEP1

Remove the solder from each of the cables.



*DATE LEAD = SUB LEAD (CK2-1169-000)

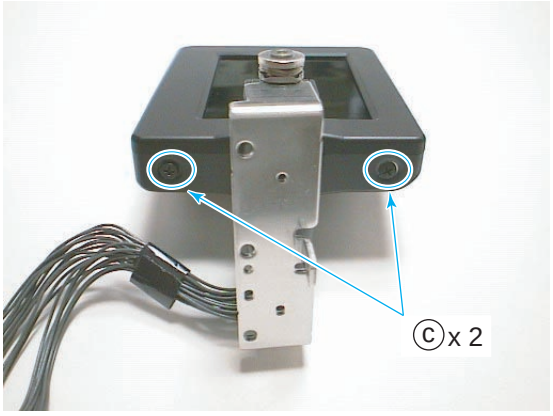


STEP1

Remove the LCD PLATE.

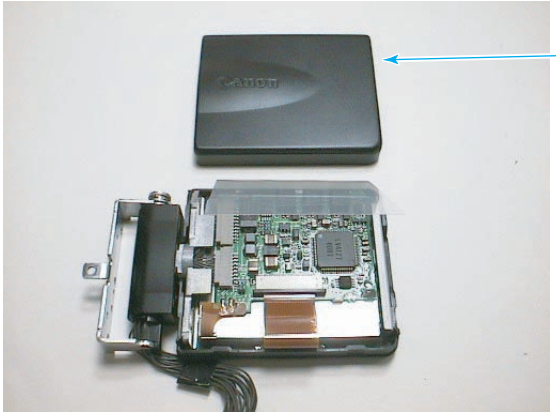
STEP2

Remove the screws.
ⓒ X 2



STEP3

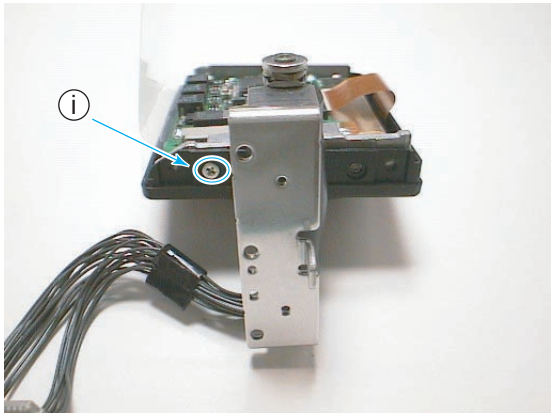
Remove the screws.
ⓒ X 2



STEP4

Remove the LCD TOP COVER.

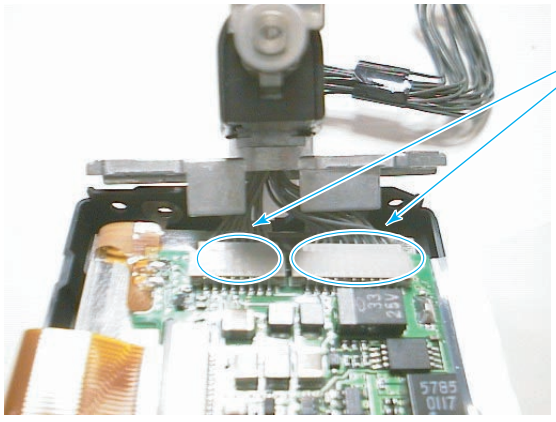
<Screw>
ⓒ : CD1-3278-000 (M1.7mm, L3.0mm, Black)



STEP5

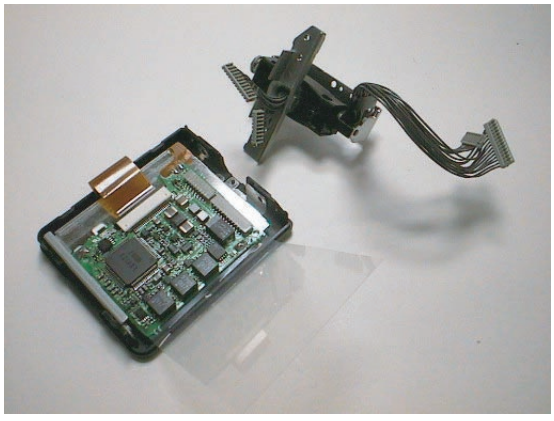
Remove the screw.

ⓘ X 1



STEP6

Disconnect the cables.

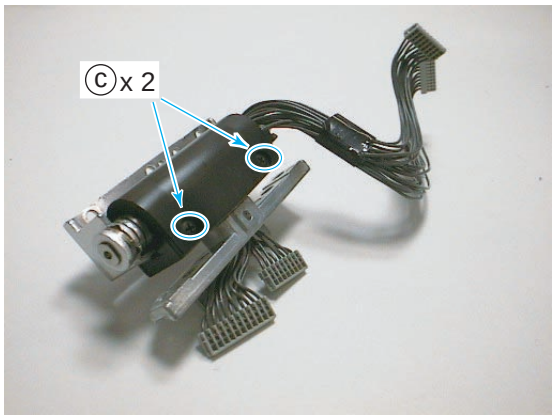


STEP7

Remove the HINGE UNIT.

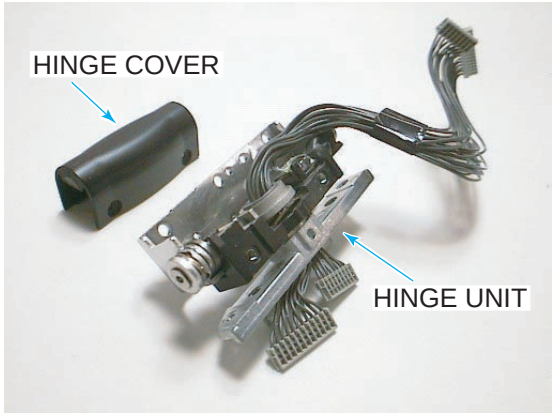
<Screw>

ⓘ : XA1-7170-307 (M1.7mm, L3.0mm)



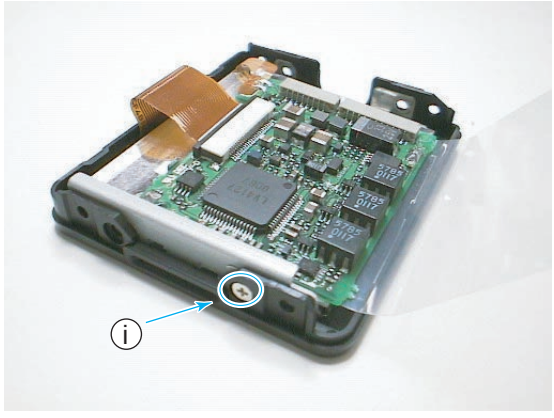
STEP8

Remove the screws.
ⓒ X 2



STEP9

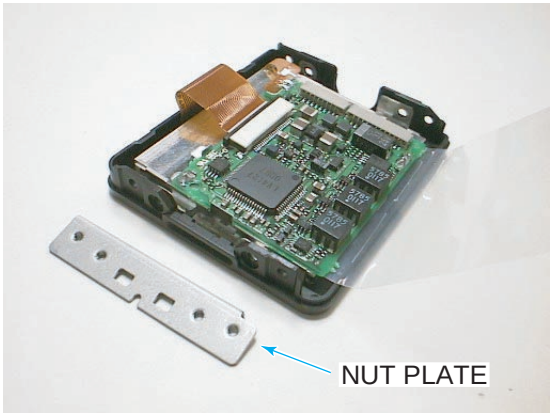
Remove the HINGE COVER.



STEP10

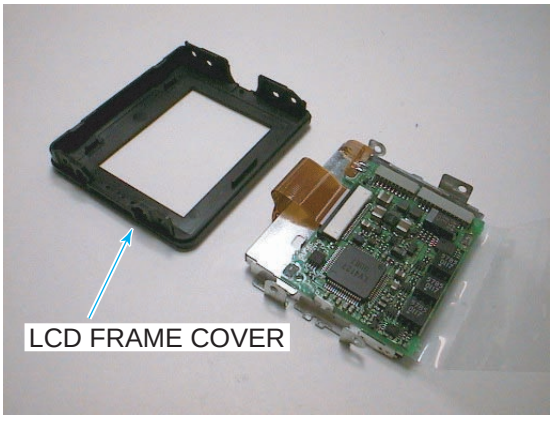
Remove the screw.
ⓘ X 1

<Screw>
ⓒ : CD1-3278-000 (M1.7mm, L3.0mm, Black)
ⓘ : XA1-7170-307 (M1.7mm, L3.0mm)



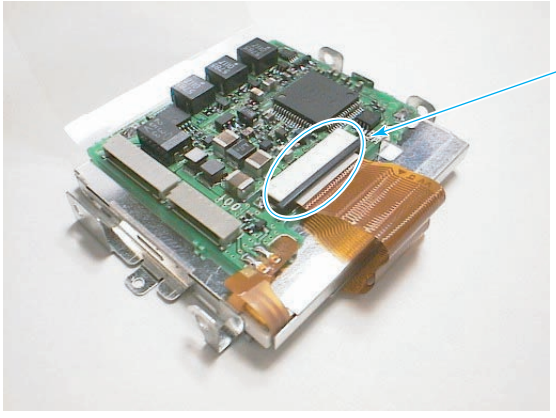
STEP11

Remove the NUT PLATE.



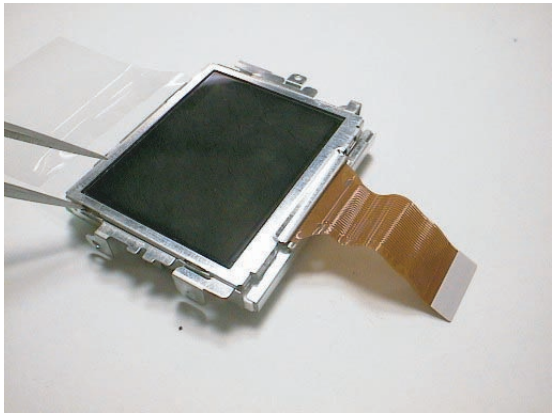
STEP12

Remove the LCD FRAME COVER.



STEP13

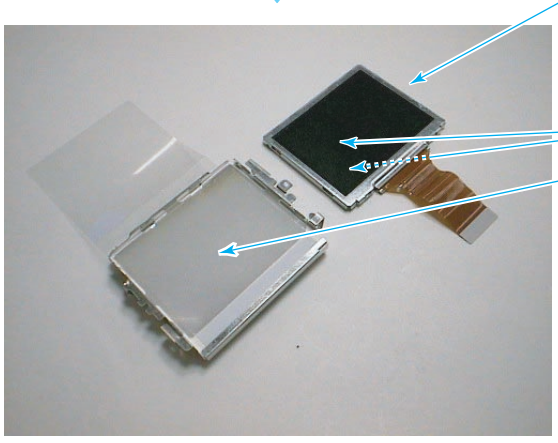
Disconnect the flex.



STEP14

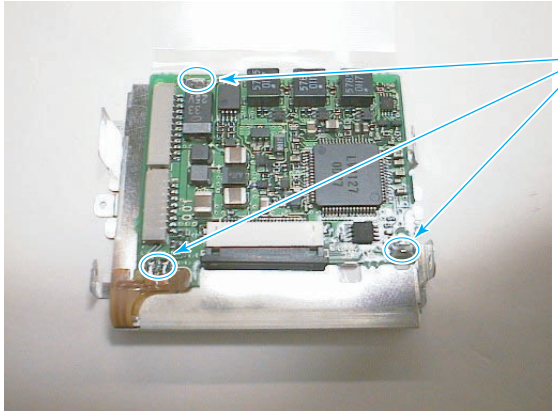
Remove the LCD PANEL.

LCD PANEL



At Assembly

Be sure to remove the protective sheet attached to service parts.

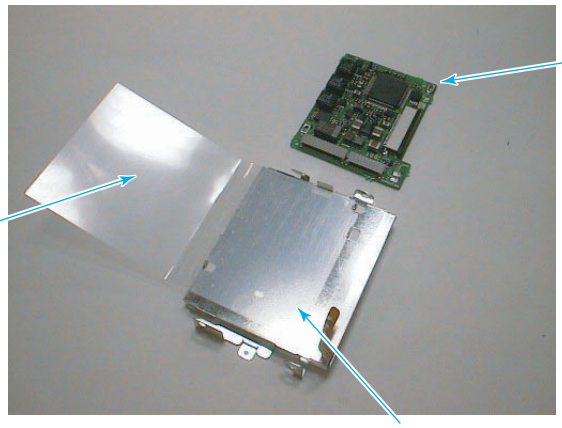


STEP15

Remove the solder.

STEP16

Remove the LCD PCB ASS'Y.


LCD PCB ASS'Y
LCD SHEET
BACK LIGHT UNIT

3 Adjustments

3-1 Replacement Parts and Adjustment Items

PowerShot G1 requires electrical adjustments when certain parts are replaced.
The table below indicates the adjustments required for the respective part replacements.
For all other parts not listed below, no electrical adjustments are necessary after replacement.

Adjustment Items / Replacement Part	CCD Adjustment	Optical Unit Adjustment	Imaging Process Adjustment	LCD Adjustment	Flash Adjustment
BATTERY BOX UNIT					
OPTICAL UNIT	● #1	● #2	● #3		● #4
FLASH UNIT					●
MAIN PCB ASS'Y	○	○	○	○	○
LCD PCB ASS'Y				●	
LCD PANEL				●	
BACK LIGHT UNIT				●	

● : Adjustment is necessary after replacement.
○ : Adjustment is necessary after replacement.
(Adjustment is not necessary, only if the adjustment data has been saved and then transferred after the part is replaced.)
Blank : Adjustment is unnecessary.

* When OPTICAL UNIT is replaced, adjust certainly at the procedure as below.

#1. CCD Adjustment
↓
#2. Optical Unit Adjustment
↓
#3. Imaging Process Adjustment
↓
#4. Flash Adjustment

3-2 Adjustment Tool

The following tools are required for electrical adjustment.

DESCRIPTION	PARTS NO.	REMARKS
PC/AT-Compatible Machine (Windows98 pre-installed Model, USB port)	—	Local purchase
Adjustment Software (CD-ROM)	CY8-4368-031	CD-ROM, SERVICE MANUAL (J/E)
Compact Power Adapter CA-560	—	Enclosed in camera kit (or Local purchase)
INTERFACE CABLE IFC-200PCU (USB Cable)	FH6-0775-000	(or Local purchase)
Speedlite 380EX	—	Local purchase
Brightness Box (light source A)	—	Local purchase
Color Viewer (5600° K)	DY9-2039-100	(or Local purchase)
Standard Color Bar Chart	DY9-2002-000	(or Local purchase)
Standard 18% Gray Chart	CY4-6016-000	CHART, 18%GRAY
Auto Focus Chart	—	*1
Color Bar Image	—	*2
W-10 Filter*3	CY9-1543-000	(or Local purchase)
C-12 Filter	DY9-2029-000	(or Local purchase)
Light-Shielding Cloth (500 x 500 or larger)	—	Local purchase
Tripod	—	Local purchase
CF card	—	Local purchase

*1 Print the AF Chart on the letter size paper from the " G1AFc.pdf " (in the folder of this CD-ROM, :\ AdjustmentSoftware \ PowerShot G1 \ ).

*2 It's the " Dcim " folder (in the folder of this CD-ROM, : \ AdjustmentSoftware \ PowerShot G1\ ).

*3 2pcs. required.

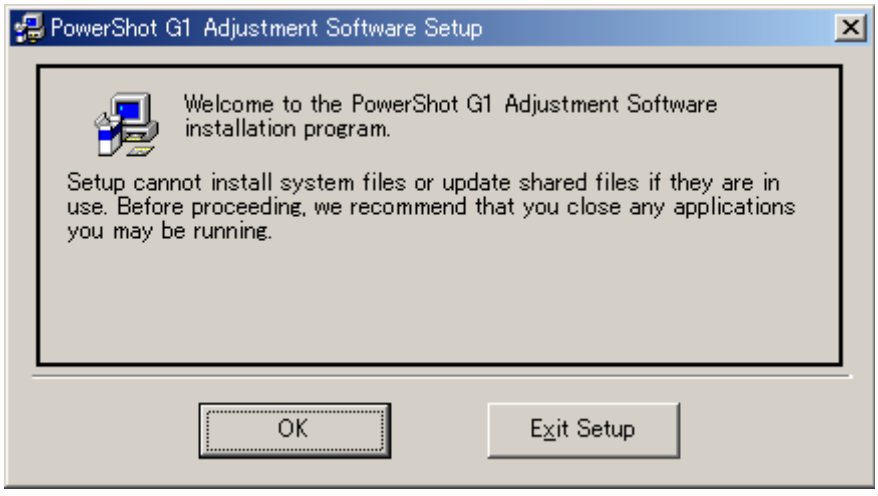
3-3 Before Starting Electrical Adjustment

3-3-1 TW AIN Driver Installation

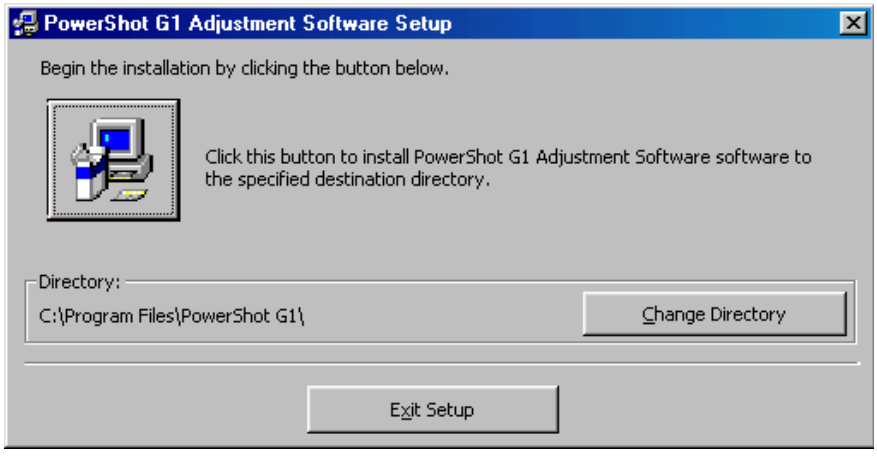
Install the PowerShot G1 USB Driver to PC.
("Imaging Process Adjustment" is impossible when the RS-232C TW AIN driver is used.)

3-3-2 Installing the Adjustment Software

① Double click : \AdjustmentSoftware \ PowerShot G1 \ English* \ Setup.exe \ , in this CD-ROM.
*When you perform the adjustment in the U.S.A., double click the Setup.exe in the "USA" folder.
② When the dialog box below appears, click the "OK" button.


PowerShot G1 Adjustment Software Setup
Welcome to the PowerShot G1 Adjustment Software installation program.
Setup cannot install system files or update shared files if they are in use. Before proceeding, we recommend that you close any applications you may be running.
OK
Exit Setup

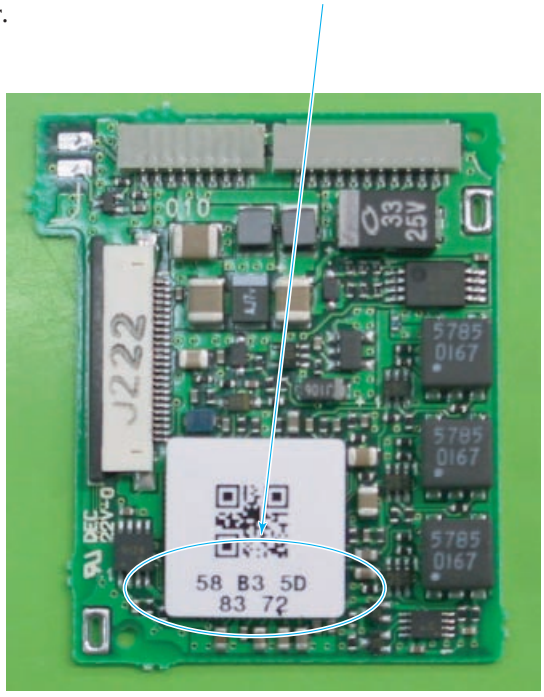
③ When the dialog box below appears, click the button. (Software installation will then begin.)


PowerShot G1 Adjustment Software Setup
Begin the installation by clicking the button below.
Click this button to install PowerShot G1 Adjustment Software software to the specified destination directory.
Directory:
C:\Program Files\PowerShot G1\
Change Directory
Exit Setup

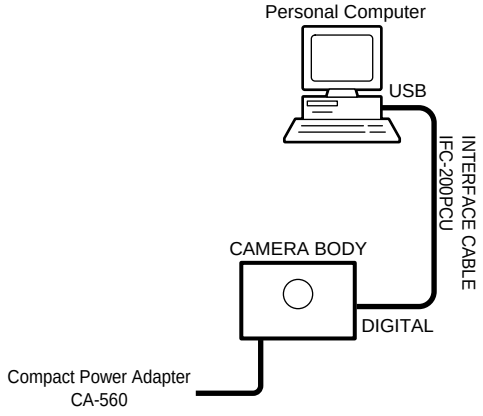
3-3-3 Preparation

Before starting up the Adjustment Software, follow the preparatory steps below:

① Obtain all the tools necessary for the adjustment.
② For the LCD Adjustment, jot down the numeric value written on the data-sheet of LCD PCB ASS'You will need it later.



③ For the "Language Setting", jot down the setting of the language and the video output type. You will need it later.
(Refer to 3-5-6.Language setting)
④ Connect the Camera to the Power Source with the Compact Power Adapter CA-560.



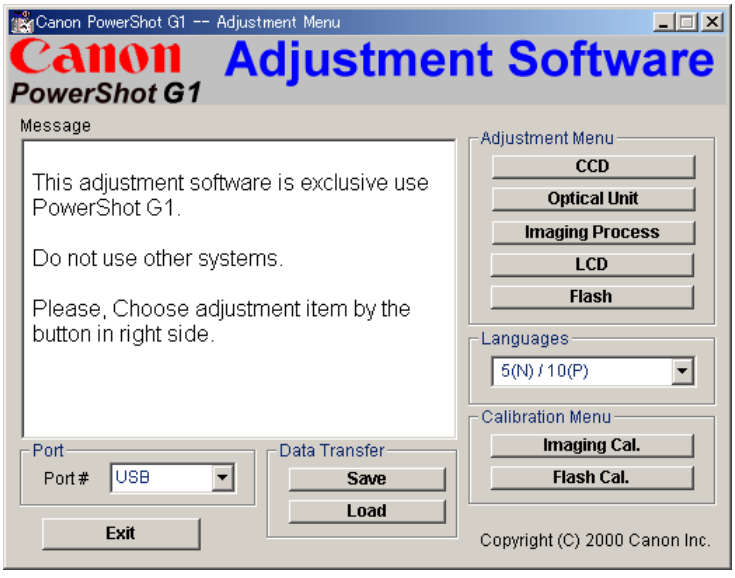
⑤ Connect the Camera's Digital terminal to the PC's USB Port with INTERFACE CABLE IFC-200 PCU.
⑥ Set the camera to the "PC" mode.
Note: Perform the preparation in the following order otherwise the camera won't work properly.

3-3-4 Precautions for Connecting to a USB Port

After completing the preparatory steps, use Explorer and double click
C:\Program Files\PowerShot G1\PSG1.exe\

3-3-5 Menu Window

When the Adjustment Software starts up, the Menu Window below will appear.



3-3-6 How to Use the Adjustment Software

■ Calibration/Adjustment

For starting, click the button related with adjustment.

* Whenever you use your light source for the adjustment for the first time, besure to click the "Imaging Cal." Button.
* Whenever you use your Standard 18% Gray Chart for the adjustment for the first time, besure to click the "Flash Cal." Button.

(For the details, refer to "3-4 Calibration" or "3-5 Adjustment Procedure".)

■ Quitting the Adjustment Software

Click the "Exit" button.

■ Saving or Loading data

- "Save" button: This button saves all adjustment data stored on the camera in text format.
- "Load" button: This button loads all adjustment data saved in text format to the camera.

■ Saving or Loading data

- "Save" button: This button saves all adjustment data stored on the camera in text format.
- "Load" button: This button loads all adjustment data saved in text format to the camera.

■ Notes

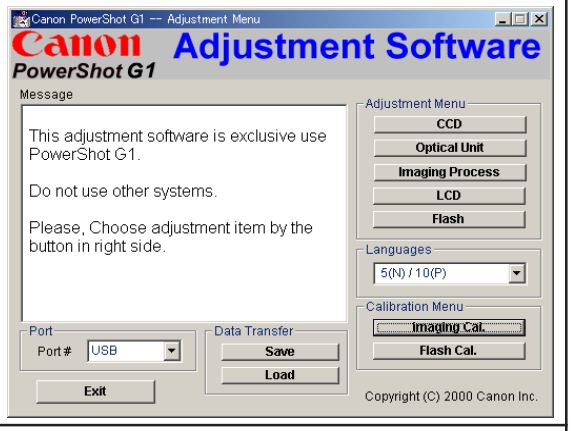
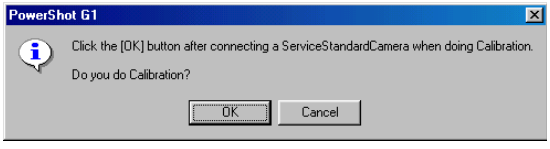
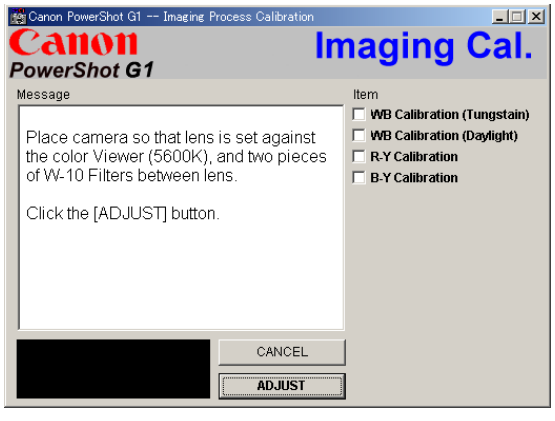
- If the adjustment fails, a message indicating the failure will appear. If this happens, do the adjustment again.
- The Adjustment Software is dedicated only to Canon Digital Camera PowerShot G1. Never use it for any other camera.
- The Windows98 must be pre-installed on the computer that is equipped with the USB terminal. (Windows95 does not support the USB.)
  *The operation with the Win2000, WinMe, etc. is not guaranteed.

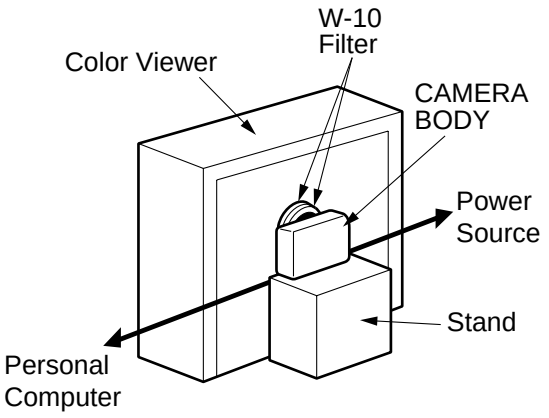
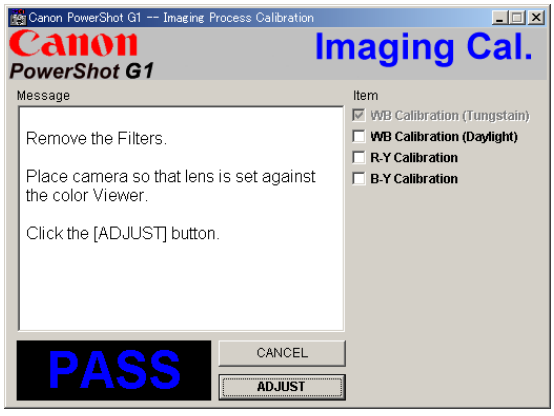
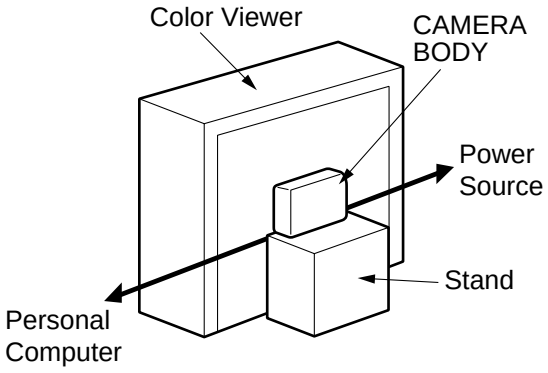
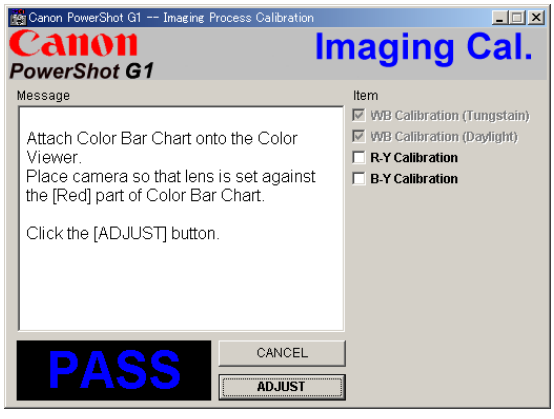
3-4 Calibration

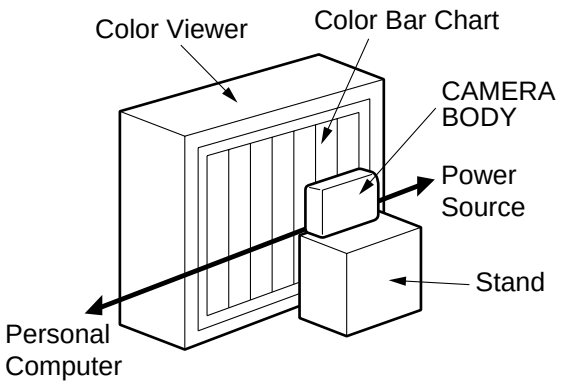
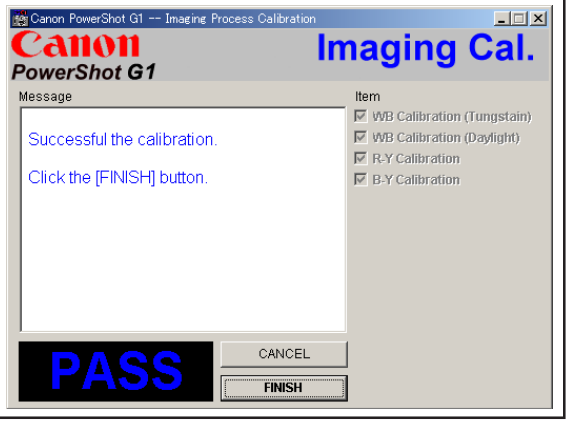
3-4-1 Imaging Calibration

■ Tools Used

- Reference Camera (Merchandise)
- Compact Power Adapter CA-560
- Adjustment Software
- Color Bar Chart
- Personal Computer
- INTERFACE CABLE IFC-200PCU
- Color Viewer (5600° K)
- W-10 Filter (2pcs.)

1	Click the “Imaging Cal.” button.	
2	When the message on the right appears, check that the reference camera (Marchandise) is connected to the computer. Click the “OK” button.	
3	When the message on the right appears, go to 4.	

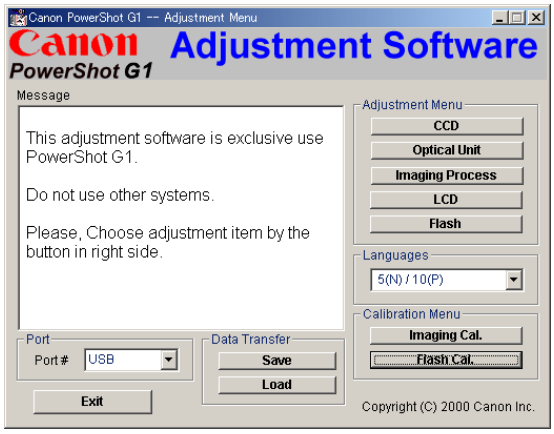
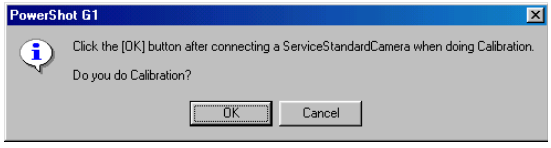
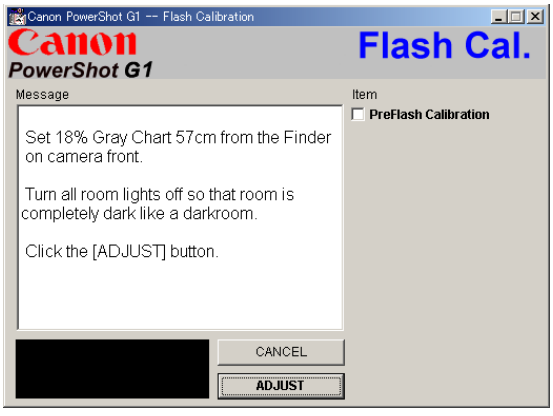
4	① Place the camera so that the lens is set against the center part of the Color Viewer via the two W-10 filters. ② Click the “ADJUST” button.	
5	When the message on the right appears go to 6.	
6	① Remove the Filters from the Color Viewer. ② Place the camera so that the lens is set against the center part of the Color Viewer. ③ Click the “ADJUST” button.	
7	When the message on the right appears, go to 8.	

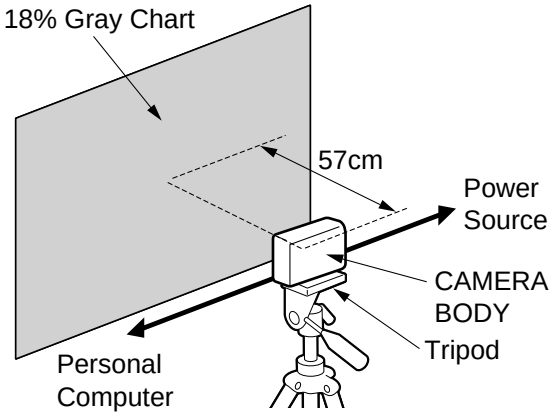
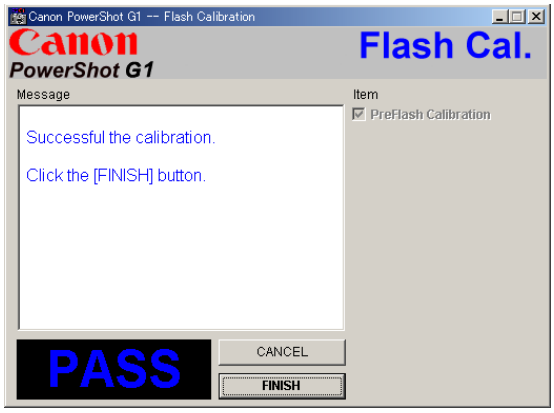
8	① Attach the Color Bar Chart to the Color Viewer . ② Place the camera so that the lens is set gently against the “Red” part of the Color Bar Chart. ③ Click the “ADJUST” button.	
9	① When the message on the right appears, place the camera so that the lens is set gently against the “Yellow” part of the Color Bar Chart. ② Click the “ADJUST” button.	
10	When the message on the right appears, click the “FINISH” button. (This ends the “Imaging Cal”.)	

3-4-2 Flash Calibration

■ Tools Used

- Reference Camera (Merchandise)
- Personal Computer
- Compact Power Adapter CA-560
- INTERFACE CABLE IFC-200PCU
- Adjustment Software
- 18% Gray Chart
- Tripod

1	Click the “Flash Cal.” button.	
2	① When the message on the right appears, check that the reference camera (Merchandise) is connected to the computer. ② Click the “OK” button.	
3	When the message on the right appears, go to 4.	

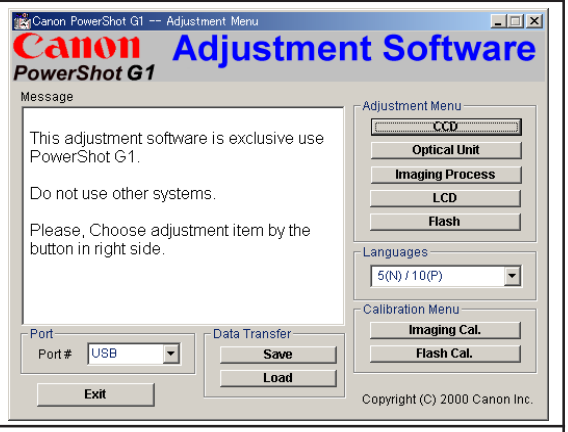
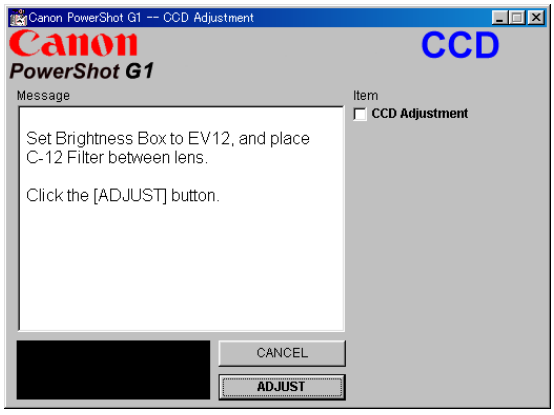
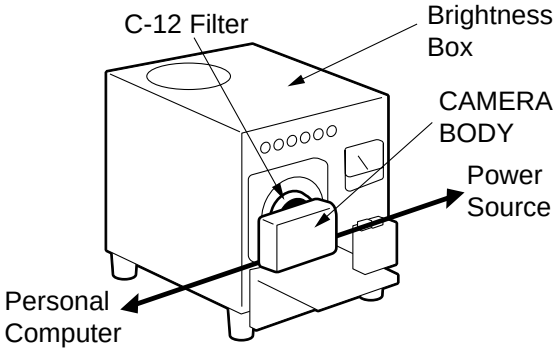
4	① Place the 18% Gray Chart 57cm away from the finder of camera front. ② Make the room as dark as a darkroom. ③ Click the “ADJUST” button.	
5	① When the message on the right appears, click the “FINISH” button.(This ends the “Flash Cal.”.) ② Turn the room light back on.	

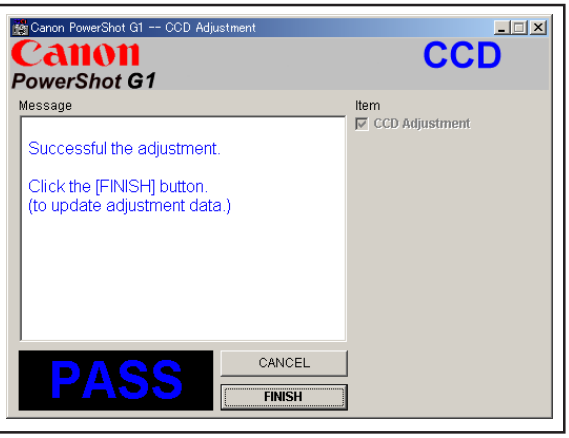
3-5 Adjustment Procedure

3-5-1 CCD Adjustment

■ Tools Used

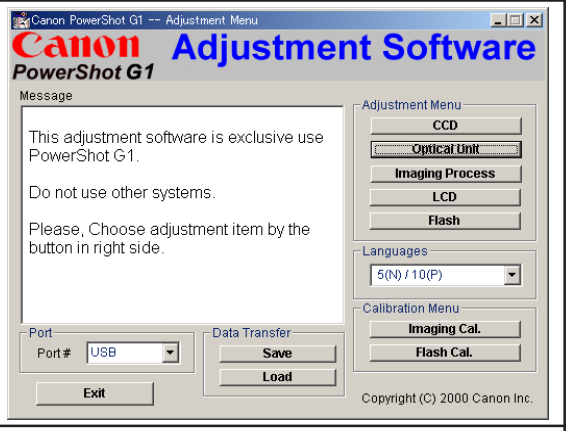
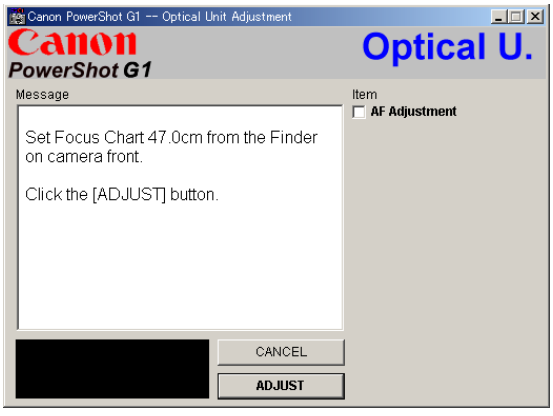
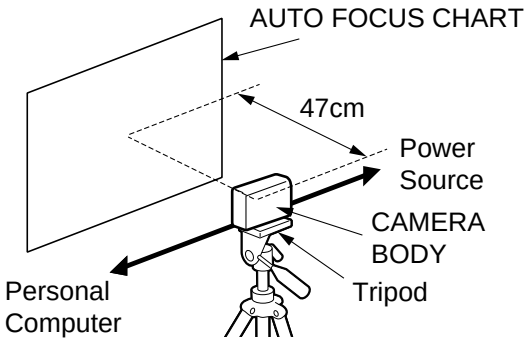
- Personal Computer
- INTERFACE CABLE IFC-200PCU
- Brightness Box (light source A)
- Compact Power Adapter CA-560
- Adjustment Software
- C-12 Filter

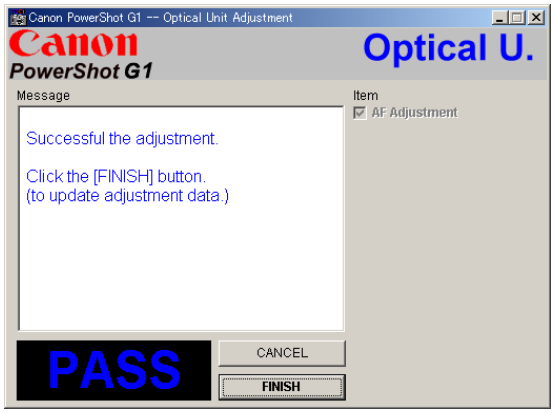
1	Click the “CCD”button.	
2	When the message on the right appears, Go to 3.	
3	① Place the camera so that lens is set against the light source surface of the Brightness Box via the C-12 Filter. ② Set the Brightness Box to EV12. ③ Click the “ADJUST” button.	

4	When the message on the right appears, click the “FINISH” button. (This ends the “CCD” Adjustment.)	

■ Tools Used

- Personal Computer
- Compact Power Adapter CA-560
- INTERFACE CABLE IFC-200PCU
- Adjustment Software
- Auto Focus Chart
- Tripod

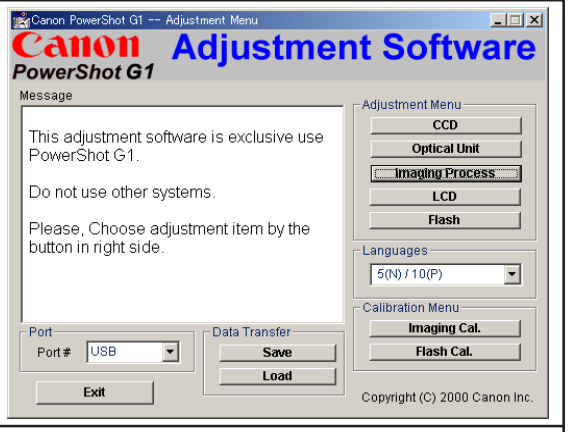
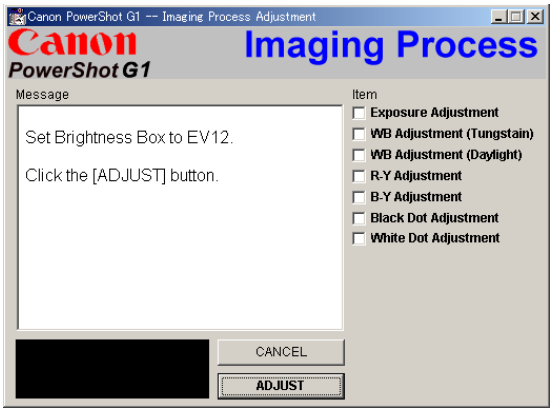
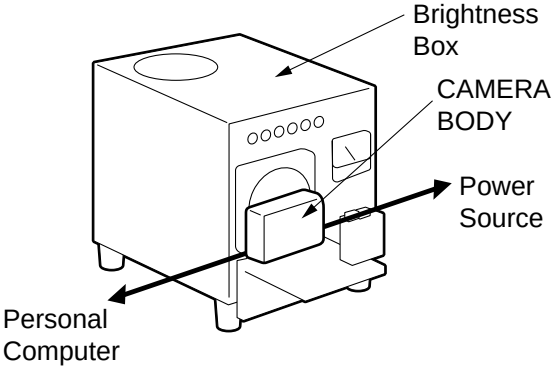
1	Click the “Optical Unit”button.	
2	When the message on the right appears, go to 3.	
3	① Place the Auto Focus Chart 47cm away from the finder of camera front. * Place the Auto Focus Chart on a plain color wall or equivalent. * Adjust the light so that the brightness of the chart will be about EV8.5. ② Fine-adjustment the position of the camera so that the center of the Auto Focus Chart is aligned with the center of the LCD. ③ Click the “ADJUST” button.	

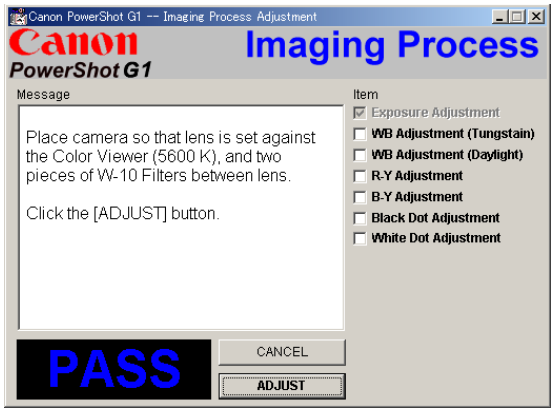
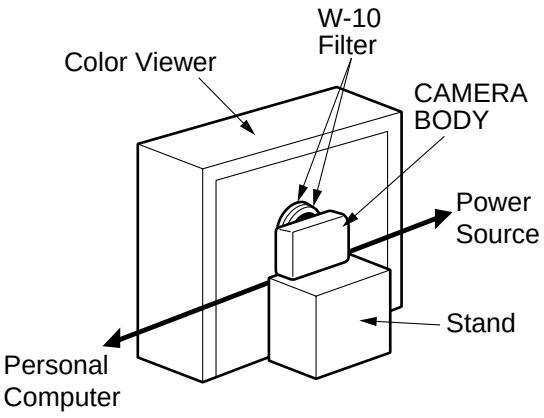
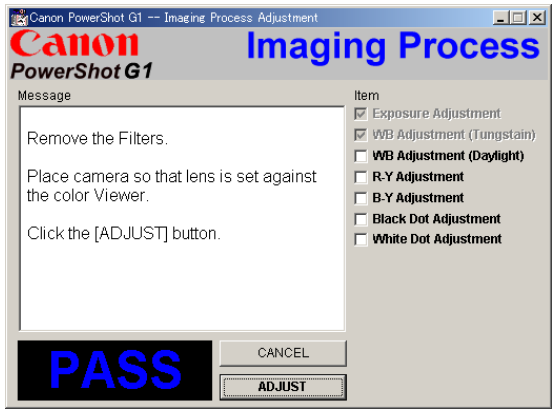
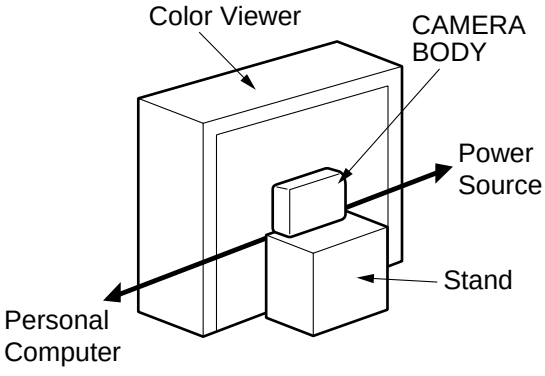
4	When the message on the right appears, click the “FINISH” button. (This ends the “Optical U.” Adjustment.)	

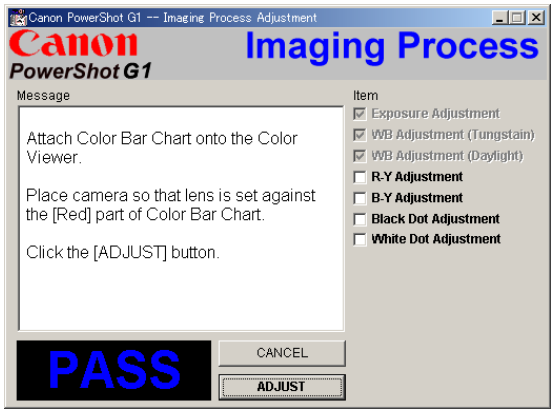
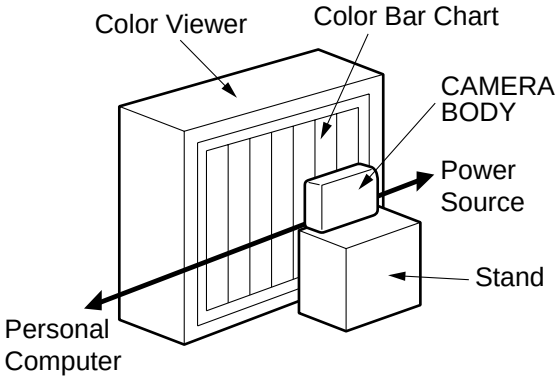
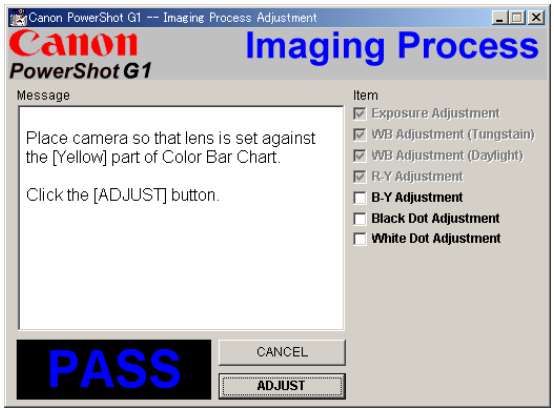
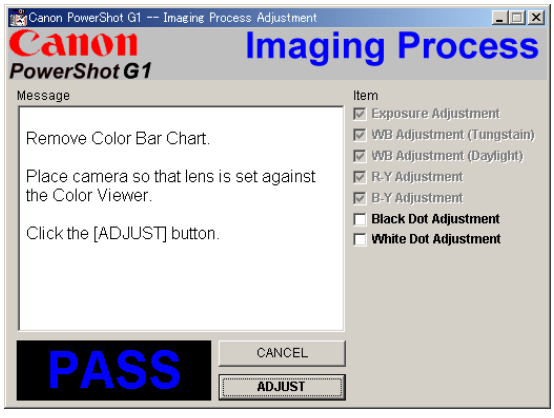
3-5-3 Imaging Process Adjustment

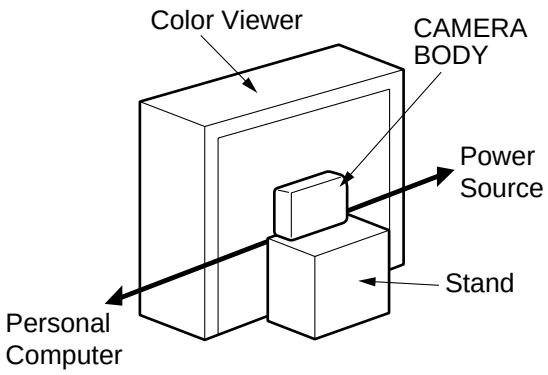
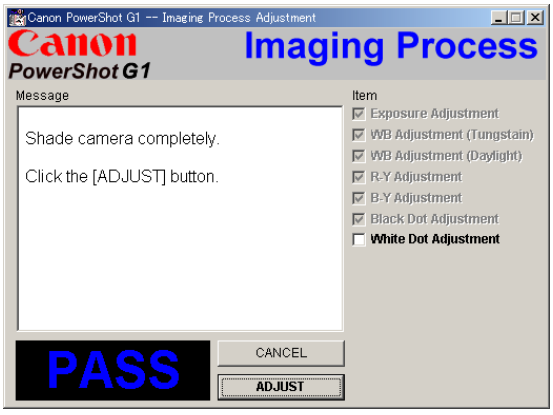
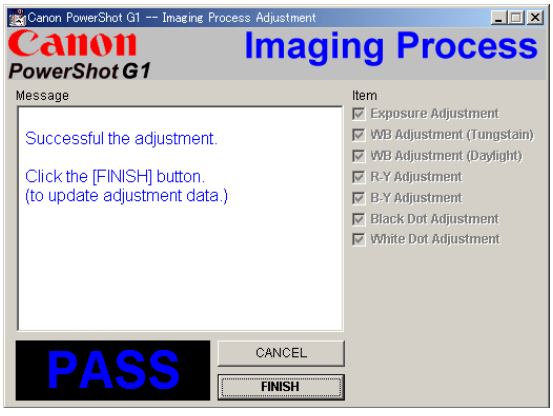
■ Tools Used

- Personal Computer
- Compact Power Adapter CA-560
- INTERFACE CABLE IFC-200PCU
- Adjustment Software
- Brightness Box (light source A)
- W-10Filter (2 pcs.)
- Light-Shielding Cloth
- Color Viewer (5600° K)
- Color Bar Chart

1	Click the “Imaging Process” button.	
2	When the message on the right appears, go to 3.	
3	① Place the camera so that lens is set against the light source surface of the Brightness Box . ② Set the Brightness Box to EV12. ③ Click the “ADJUST” button.	

4	When the message on the right appears, go to 5.	
5	① Place the camera so that lens is set against the center of the Color Viewer via the two W-10 Filters. ② Click the “ADJUST” button.	
6	When the message on the right appears, go to 7.	
7	① Remove the W-10 filters. ② Place the camera so that the lens is set against the center part of the Color Viewer. ③ Click the “ADJUST” button.	

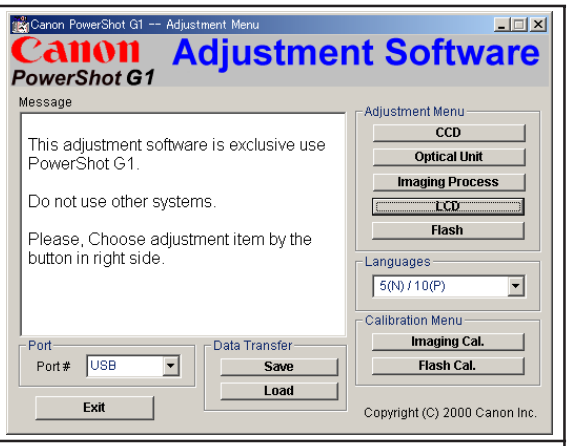
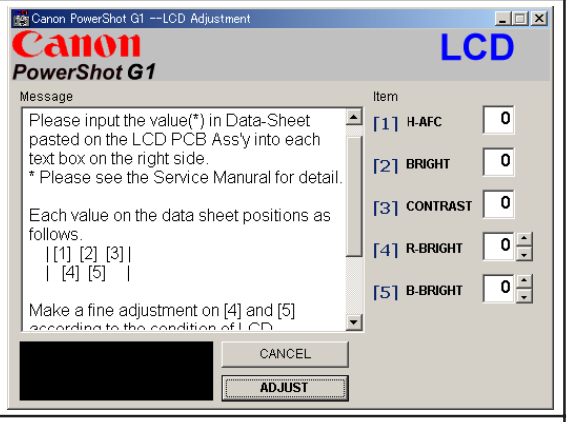
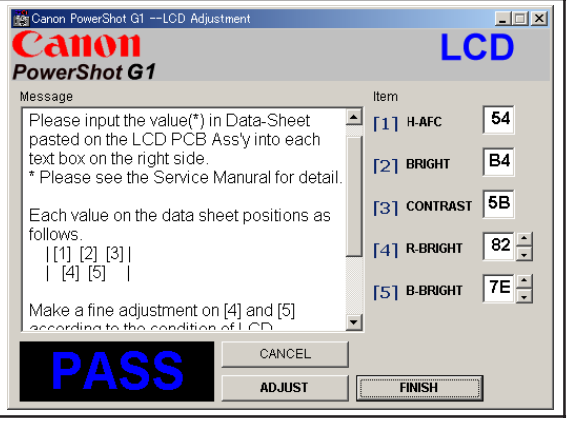
8	When the message on the right appears, go to 9.	
9	① Attach the Color Bar Chart to the Color Viewer . ② Place the camera so that the lens is set gently against the “Red ”part of the Color Bar Chart. ③ Click the “ADJUST” button.	
10	① When the message on the right appears, place the camera so that the lens is set gently against the “Yellow” part of the Color Bar Chart. ② Click the “ADJUST” button.	
11	When the message on the right appears, go to 12.	

12	① Remove the Color Bar Chart from the Color Viewer. ② Place the camera so that lens is set against the center of the Color Viewer. ③ Click the “ADJUST” button.	
13	① When the message on the right appears, cover the camera with the Light-Shielding Cloth so that the no light reasons the CCD. ② Click the “ADJUST” button.	
14	When the message on the right appears, click the “FINISH”button. (This ends the “Imaging Process” Adjustment.)	

3-5-4 LCD Adjustment

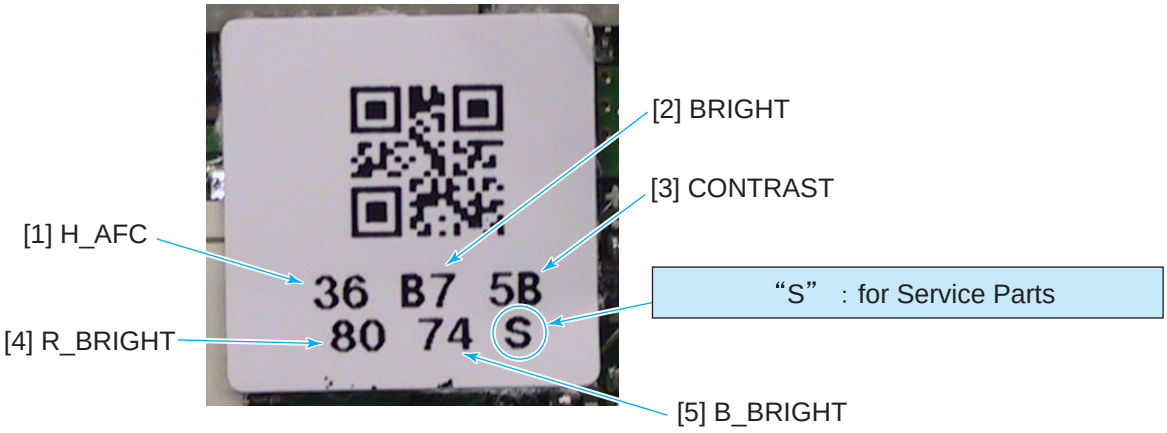
■ Tools Used

- Reference Camera (Merchandise)
- Compact Power Adapter CA-560
- Adjustment Software
- Color Bar Image in “AUT_0001.jpg”
- Personal Computer
- INTERFACE CABLE IFC-200PCU
- CF card

1	Click the “LCD” button.	
2	① When the message on the right appears, enter in the text boxes the data written on the data-sheet is attached with LCD PCB ASS’Y ② Click the “ADJUST” button.	
3	① Make a fine adjustment on [4]R_BRIGHT and [5]B_BRIGHT according to the condition of LCD, and then click the “ADJUST” button to preview on the LCD. (This fine-adjustment is unnecessary for Service part.) ② Click the “FINISH” button. (This ends the “LCD” Adjustment.)	

<< Data Sheet of LCD PCB ASS'Y >>

The data of the data-sheet attached with LCD PCB ASS'Y has varieties (Adjustment-Value, default-Value or none).



Depending on this information, the method of " LCD adjustment" varies when LCD PCB ASS'Y or MAIN PCB ASS'Y is replaced.
For details, please refer the table below.

Classification of the use of LCD PCB ASS'Y.	Date-Sheet		Method of "LCD Adjustment" (A or B are necessary when replacing MAIN PCB ASS'Y.)
	Position	Date	
A. Mass-produced products in the early lots (Approx. 15 k units)	N/A	———	a) Read adjustment value [1] to [5] recorded in old MAIN PCB ASS'Y using "LCD adjustment" of Adjustment Software, and jot down the value. * If the above is impossible, replace LCD PCB ASS'Y with service parts. In that case, refer C. for LCD adjustment. b) After replacing with the new MAIN PCB ASS'Y, input the value you jot down in a).
B. Products mass-produced after October , 2000	The right side of LCD PCB ASS'Y	[1] Adjustment value [2] Adjustment value [3] Adjustment value [4] Default value [5] Default value	a) Input the value [1] to [5] written on the data-sheet. b) Regarding [4] and [5], conduct fine adjustment. (Refer to the next page.)
C Service parts	The right side of LCD PCB ASS'Y	[1] Adjustment value [2] Adjustment value [3] Adjustment value [4] Adjustment value [5] Adjustment value (There is "S" mark in the bottom of right on the data-sheet.)	Input the value [1] to [5] written on the data sheet. (Fine adjustment is unnecessary.)

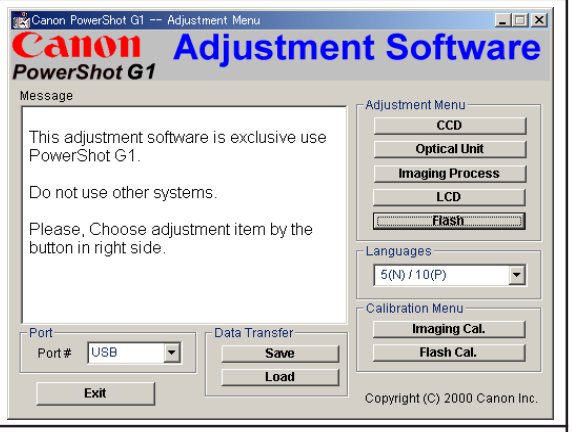
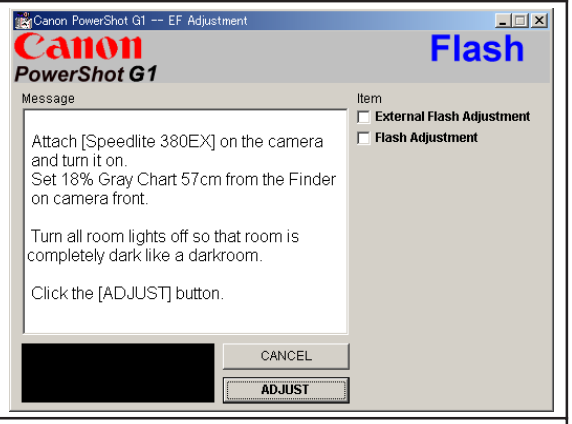
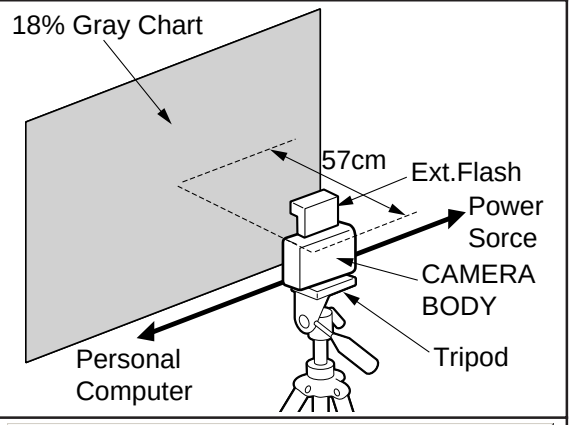
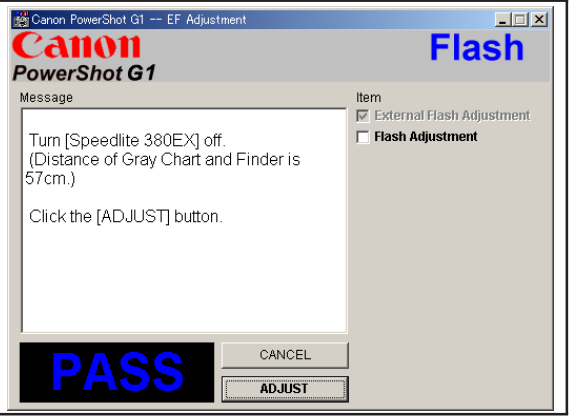
■ Fine Adjustment of [4]R-BRIGHT and [5]B-BRIGHT

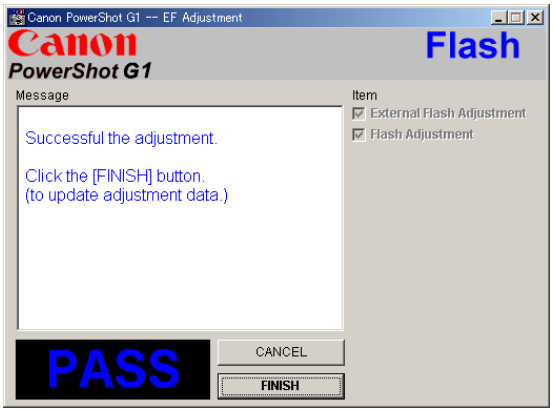
① Copy the “Dcim” folder (in the folder of CD-ROM, : \ AdjustmentSoftware \ PowerShot G1\ ) to the unrecorded CF root directory.
② Insert the CF card to the Reference Camera.
③ Set the Reference Camera in play mode, and display “Color Bar Image”.
④ Comparing a Color Bar displayed on a camera whose LCD is being adjusted with a Color Bar displayed on the Reference Camera, conduct fine-adjustment with adjustment value of [4]R_BRIGHT and [5]B_BRIGHT.

3-5-5 Flash Adjustment

■ Tools Used

- Personal Computer
- Compact Power Adapter CA-560
- INTERFACE CABLE IFC-200PCU
- Adjustment Software
- 18% Gray Chart
- Tripod
- Speedlite 380EX

1	Click the “Flash” button.	
2	When the message on the right appears, go to 3.	
3	① Attach “Speedlite 380EX” on the camera, and turn it on. ② Set 18% Gray Chart 57cm from the Finder on camera front. ③ Make the room as dark as a darkroom. ④ Click the “ADJUST” button.	
4	① When the message on the right appears,turn the External-Flash off. ② Click the “ADJUST” button.	

5	① When the message on the right appears, click the “FINISH” button. (This ends the “Flash” adjustment.) ② Turn the room light back on.	

3-5-6 Language setting

Unlike the conventional PowerShot Series (incl. IXY DIGITAL), the PowerShot G1 can select the video output system (NTSC/PAL).
(The video output system is not settable with the Adjustment Software.)

On the other hand, the user cannot select the indication language of the LCD, as it is already prepared for each destination as below. (2 kinds)

- 5 languages (N) : English, German, French, Spanish, Japanese
- 10 languages (P) : English, German, French, Dutch, Danish, Finnish, Italian, Norwegian, Swedish, Spanish

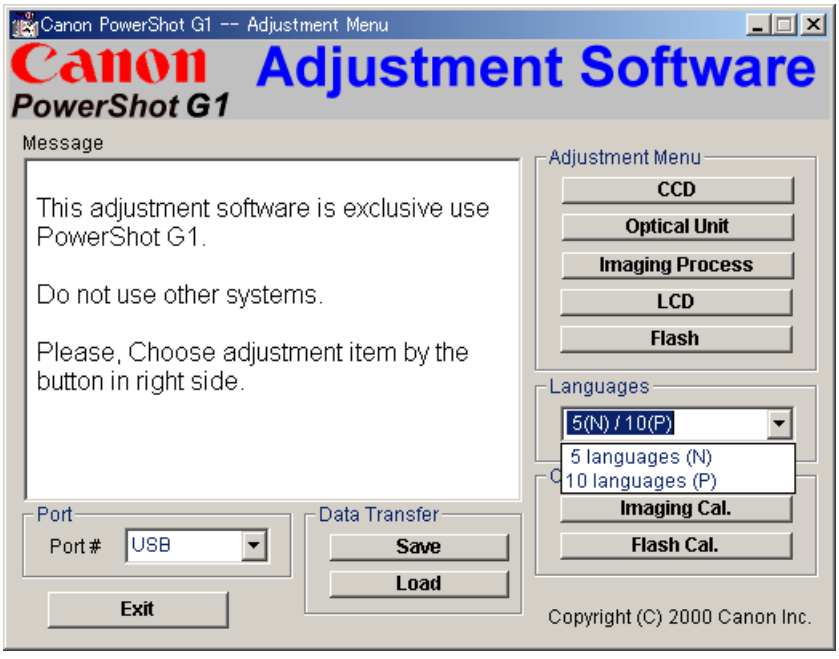
Therefore, be sure to set the indication language of the LCD on the adjustment software.

■ Tool Used

- Personal Computer
- Compact Power Adapter CA-560
- INTERF ACE CABLE IFC-200PCU
- Adjustment Software

< Procedures >

1. Open the “Languages” Pull-Down Menu of the Adjustment Software.
2. Select any of the 5 languages (N) / 10 languages (P) according to the destination (or the initial setting of camera).



Notes:

1. If the above setting is not performed, the language before the electrical adjustment is effective.
2. The MAIN PCB ASS’Y of Service part is set to the “5 languages (N)”.

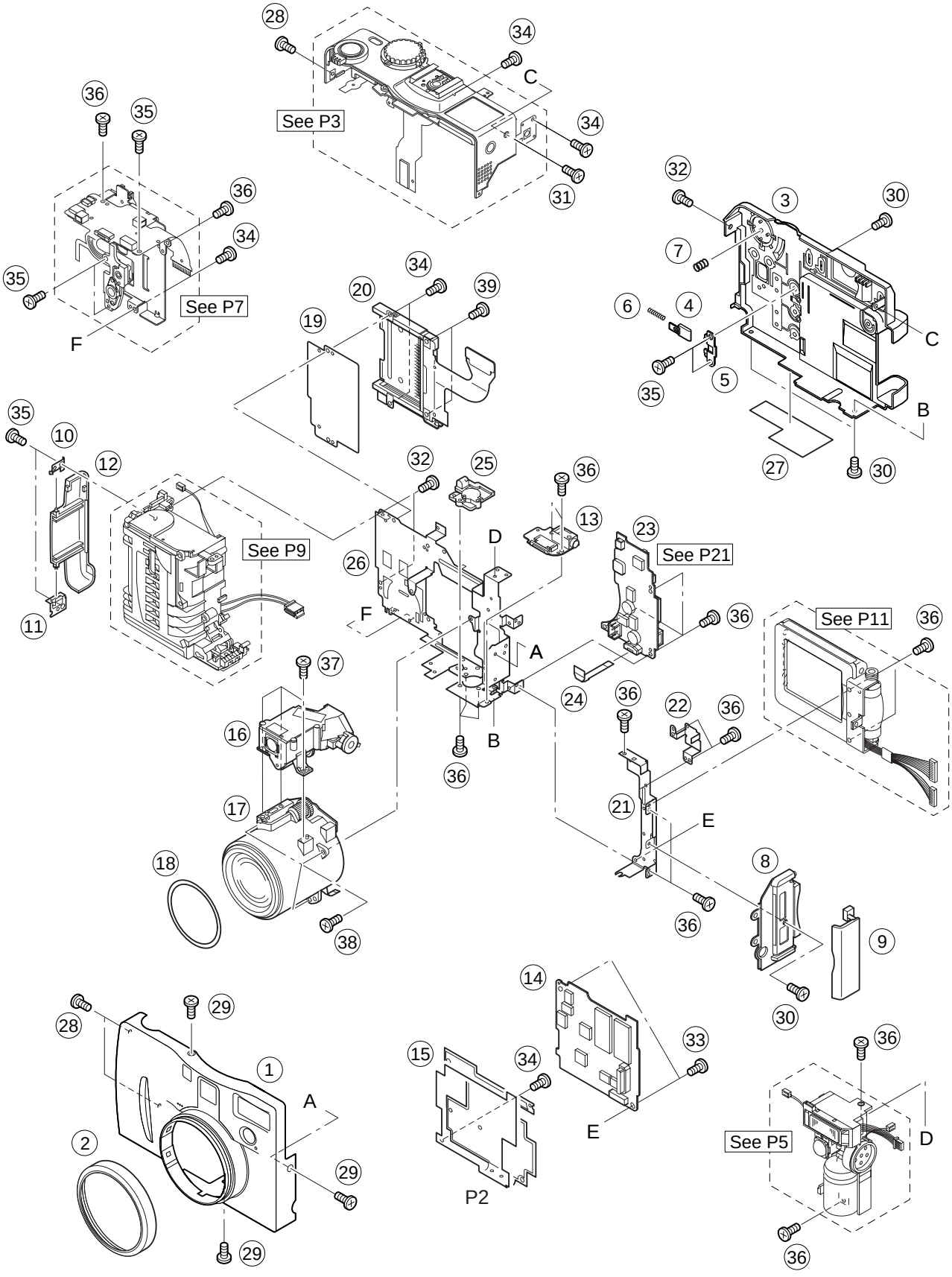
* Before the electrical adjustment, it is recommended to take notes of settings of the indication language and video output system.

3-5-7 Checking of sound recording/output

It is not required to adjust the recording/output (volume, etc.) of sound.
Check the camera if the sound is recorded/play-backed properly.

PARTS CATALOG

Main parts/units



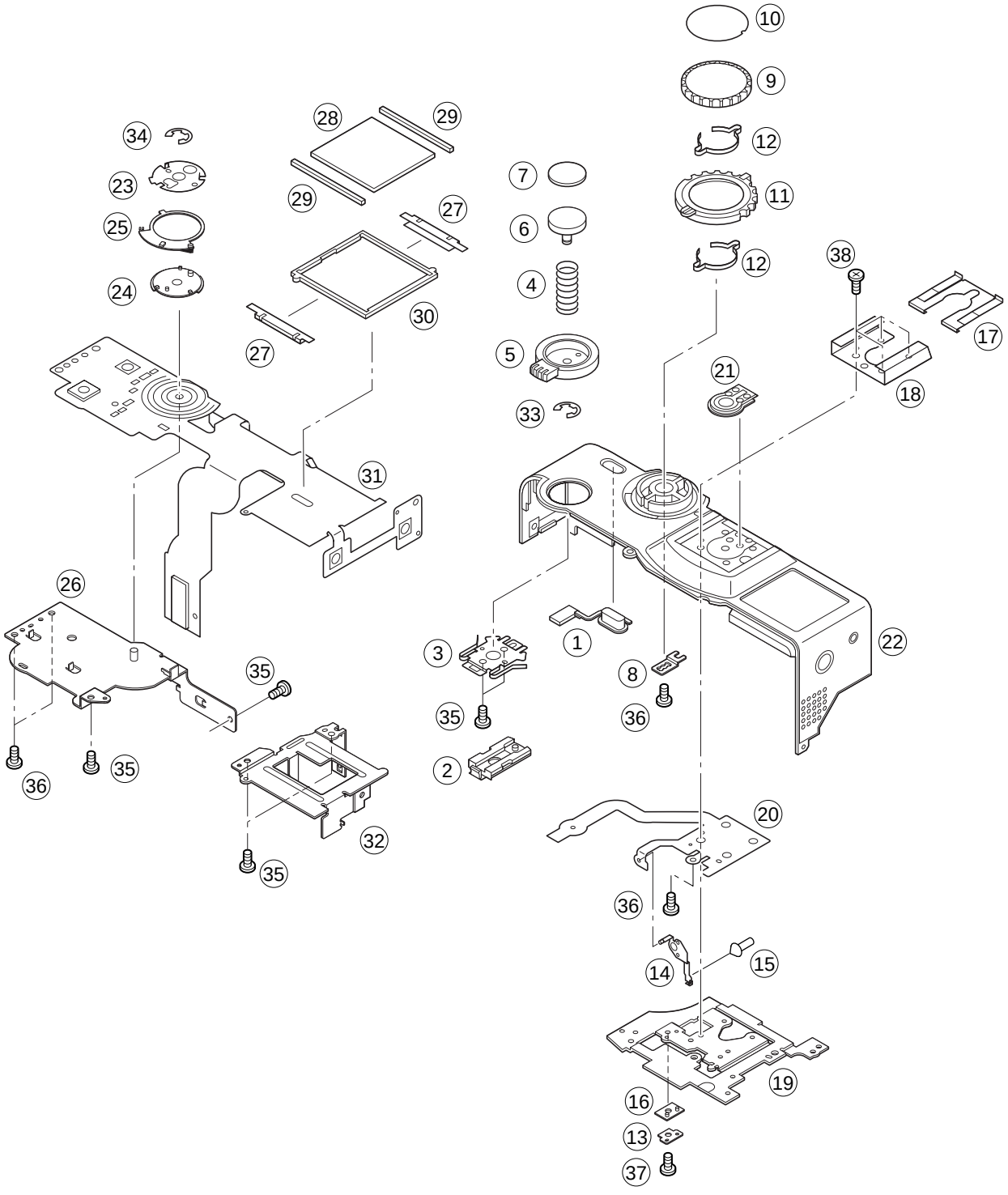
Parts List

SYMBOL	NEW	PARTS NO.	CLASS	Q'TY	DISCRIPTION	REMARKS
1	*	CM1-1069-000	B	1	FRONT COVER UNIT	
2	*	CD1-3216-000	B	1	RING, FRONT	
3	*	CM1-1068-000	B	1	REAR COVER UNIT	
4	*	CD1-3191-000	B	1	SLIDER, LCD LOCK	
5	*	CD1-3192-000	C	1	STOPPER, LCD LOCK	
6	*	CS8-5210-000	C	1	SPRING, LCD LOCK	
7	*	CS8-5211-000	C	1	SPRING, SELECTOR	
8	*	CD1-3185-000	B	1	COVER, JACK	
9	*	CD1-3174-000	B	1	COVER, SIDE	
10	*	CD1-3229-000	C	1	SPRING, CF CLICKING 1	
11	*	CD1-3230-000	C	1	SPRING, CF CLICKING 2	
12	*	CD1-3176-000	B	1	COVER, CF	
13	*	CM1-1075-000	C	1	PCB ASS'Y, JACK	
14	*	CM1-1078-000	C	1	PCB ASS'Y, MAIN	
15	*	CD1-3197-000	C	1	SHEET, MAIN	
16	*	CY1-6068-000	B	1	FINDER UNIT	
17	*	CY1-6069-000	B	1	OPTICAL UNIT	
18	*	CD1-3268-000	B	1	PLATE, LENS	
19	*	CD1-3231-000	C	1	PLATE, CF	
20	*	CM1-1077-000	C	1	CF UNIT	
21	*	CD1-3253-000	C	1	FRAME, SUB	
22	*	CD1-3244-000	C	1	FRAME, MINI	
23	*	CM1-1076-000	C	1	PCB ASS'Y, DC/DC CONVERTER	
24	*	CK1-0518-008	C	1	FPC, VID	
25	*	CD1-3255-000	C	1	BASE, TRIPOD	
26	*	CD1-3232-000	C	1	FRAME, MAIN	
27	*	CY1-6067-000	B	1	PLATE, BODY NUMBER	
28	*	CD1-3280-000	F	2	SCREW	
29	*	CD1-3277-000	F	3	SCREW	
30	*	CD1-3278-000	F	6	SCREW	
31	*	CD1-3279-000	F	1	SCREW	
32		XA4-9170-409	F	3	SCREW	
33		FC2-8736-000	F	2	SCREW	
34		XA1-7170-167	F	6	SCREW	
35		XA4-9170-359	F	5	SCREW	
36		XA1-7170-307	F	19	SCREW	
37		XA4-9170-407	F	3	SCREW	
38	*	XA1-7170-407	F	3	SCREW	
39		XA4-9170-609	F	2	SCREW	

Category of "CLASS"

A: Frequency of use: High
B: Frequency of use: Middle
C: Frequency of use: Low
D: Safety-related critical parts
E: Consumable parts
F: Standard screws and washers
S: Supply of the parts is limited

TOP UNIT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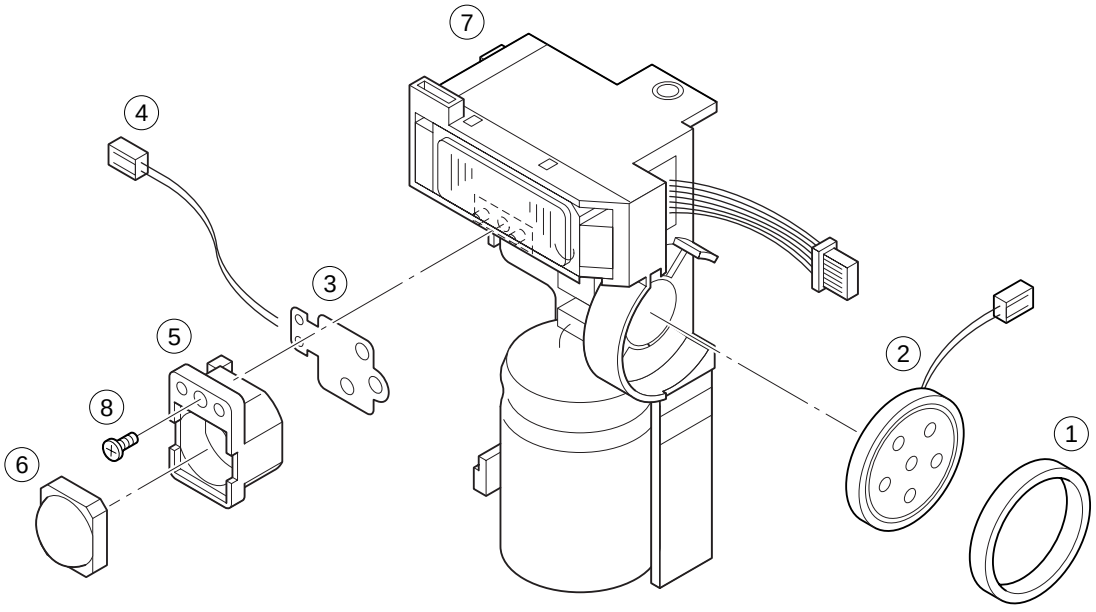
Parts List

SYMBOL	NEW	PARTS NO.	CLASS	Q'TY	DISCRIPTION	REMARKS
1	*	CD1-3252-000	B	1	BUTTON, SELF TIMER	
2	*	CL1-1006-000	C	1	BRUSH, ZOOM	
3	*	CD1-3260-000	C	1	SPRING, ZOOM	
4	*	CS2-5656-000	C	1	SPRING, RELEASE	
5	*	CD1-3259-000	B	1	LEVER, ZOOM	
6	*	CD1-3250-000	C	1	BUTTON, RELEASE	
7	*	CD1-3251-000	B	1	CAP, RELEASE	
8	*	CB2-0574-000	C	1	PLATE, MODE CONNECTIVE	
9	*	CD1-3243-000	B	1	DIAL, MODE	
10	*	CD1-3241-000	B	1	PLATE, MODE DIAL	
11	*	CD1-3242-000	B	1	DIAL, MAIN	
12	*	CD1-3236-000	B	2	SPRING, MODE CLICK	
13	*	CD1-3226-000	C	1	BASE, ACCESSORY DETECT 2	
14	*	CD1-3225-000	C	1	PLATE, ACCESSORY DETECT	
15	*	CD1-3224-000	C	1	PIN, ACCESSORY SHOE	
16	*	CD1-3223-000	C	1	BASE, ACCESSORY DETECT 1	
17	*	CA1-9328-000	C	1	SPRING, ACCESSORY SHOE	
18	*	CB1-6258-000	C	1	SHOE, ACCESSORY	
19	*	CD1-3265-000	B	1	FRAME, ACCESSORY SHOE	
20	*	CK1-0519-000	C	1	FPC, ACCESSORY SHOE	
21	*	CA1-6504-000	B	1	ACCESSORY CONTACT UNIT	
22	*	CM1-1081-000	B	1	TOP COVER UNIT	
23	*	CD1-3234-000	C	1	PLATE, MODE BASE	
24	*	CL1-1009-000	C	1	BRUSH, MODE DIAL	
25	*	CL1-1008-000	C	1	BRUSH, MAIN	
26	*	CL1-1005-000	C	1	FRAME, MODE DIAL	
27	*	CD1-3246-000	C	2	CLIP, B/W LCD	
28	*	CK9-0318-000	C	1	PANEL, B/W LCD	
29	*	CD1-3245-000	C	2	RUBBER, CONTACT	
30	*	CD1-3248-000	C	1	HOLDER, B/W LCD	
31	*	CM1-1080-000	C	1	TOP MODULE UNIT	
32	*	CD1-3249-000	C	1	FRAME, B/W LCD	
33	*	XD2-1100-132	C	1	RING, E	
34	*	XD2-1100-172	C	1	RING, E	
35		XA1-7170-167	F	6	SCREW	
36		XA4-9170-359	F	4	SCREW	
37		XA1-7170-307	F	1	SCREW	
38	*	XA1-3170-407	F	4	SCREW	

No.3

FLASH/SPEAKER UNIT

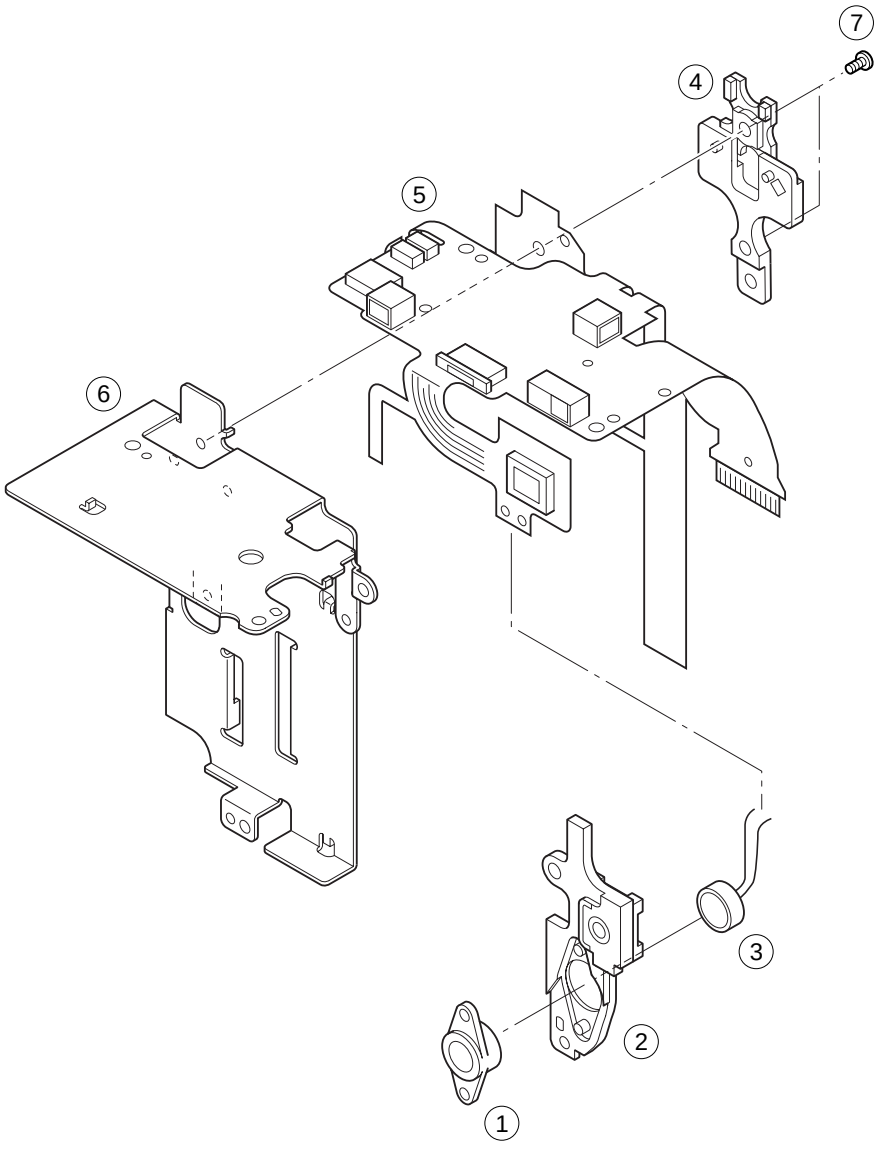


Parts List

SYMBOL	NEW	PARTS NO.	CLASS	Q'TY	DISCRIPTION	REMARKS
1	*	CD1-3281-000	C	1	BUSH, SPEAKER	
2	*	CM1-1055-000	C	1	SPEAKER UNIT	
3	*	CM1-1059-000	C	1	FPC, AF LED	
4	*	CK2-1168-000	C	1	LEAD, AF LED	
5	*	CD1-3211-000	C	1	HOLDER, AF LED	
6	*	YN2-1146-000	C	1	LENS, AF LED	
7	*	CM1-1060-000	C	1	FLASH UNIT	
8		XA4-9170-359	F	1	SCREW	

No.4

REAR PLATE UNIT

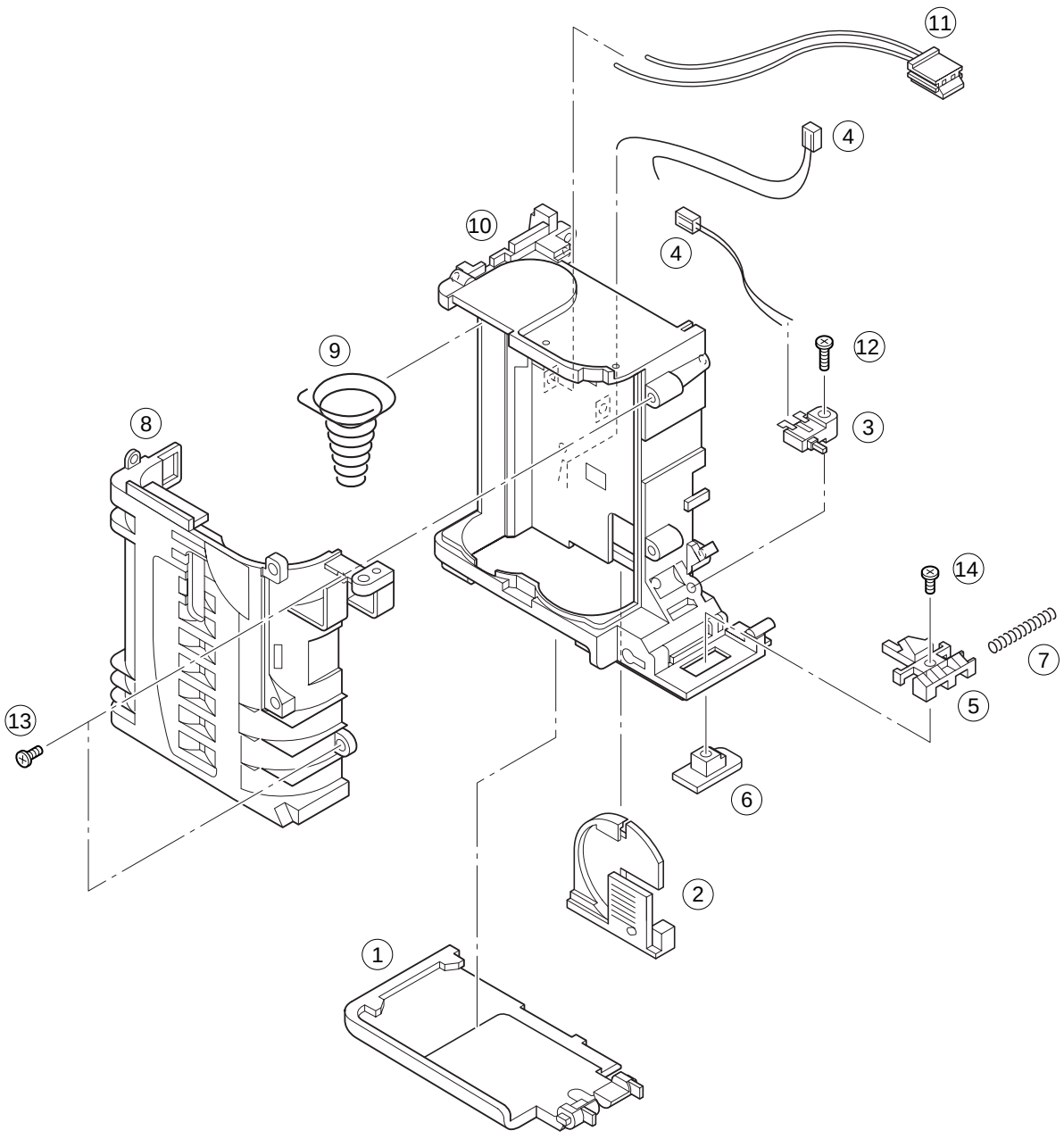


Parts List

SYMBOL	NEW	PARTS NO.	CLASS	Q'TY	DISCRIPTION	REMARKS
1	*	CD1-3213-000	C	1	HOLDER, MICROPHONE	
2	*	CD1-3212-000	C	1	COVER, FLASH IC	
3	*	CM1-1056-000	C	1	MICROPHONE UNIT	
4	*	CD1-3187-000	C	1	BASE, SEL.BUTTON	
5	*	CM1-1083-000	C	1	PCB ASS'Y, BUTTON	
6	*	CD1-3186-000	C	1	FRAME, REAR	
7		XA1-7170-307	F	2	SCREW	

No.5

BATTERY BOX UNIT

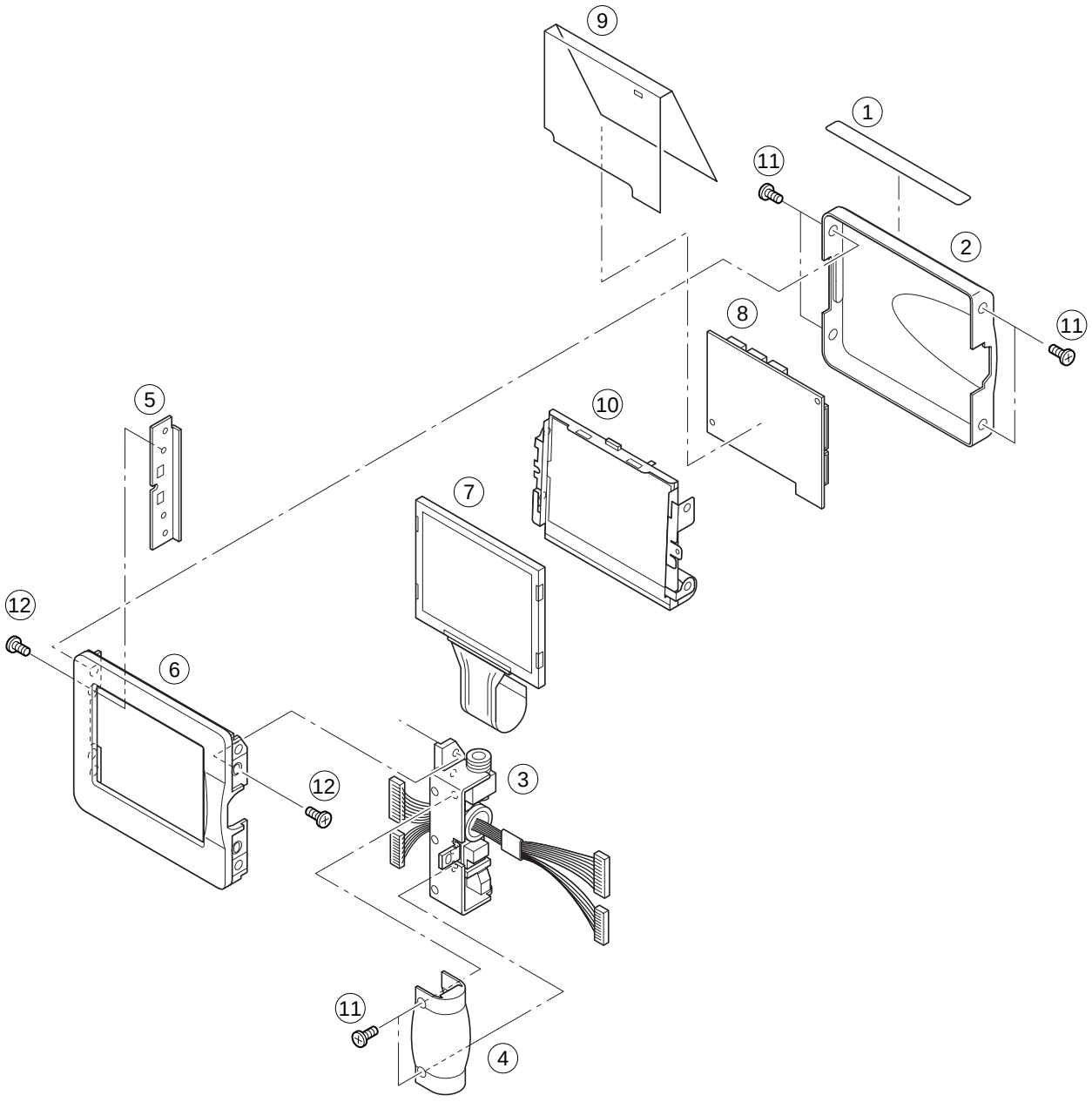


Parts List

SYMBOL	NEW	PARTS NO.	CLASS	Q'TY	DISCRIPTION	REMARKS
1	*	CD1-3175-000	B	1	COVER, BATTERY	
2	*	CD1-3264-000	B	1	HOLDER, DATE BATTERY	
3	*	WC2-0102-000	C	1	SWITCH, BATTERY LOCK	
4	*	CK2-1169-000	C	1	LEAD, SUB	
5	*	CD1-3227-000	C	1	LOCK, BATTERY COVER	
6	*	CD1-3228-000	B	1	OPENER, BATTERY COVER	
7	*	FS4-2684-000	C	1	SPRING, BATTERY LOCK	
8	*	CD1-3266-000	C	1	COVER, BATTERY BOX	
9	*	CS8-5214-000	C	1	SPRING, BATTERY EJECT	
10	*	CL1-1007-000	C	1	BATTERY BOX MAIN UNIT	
11	*	CK2-1167-000	C	1	LEAD, POWER	
12		XA4-9170-359	F	1	SCREW	
13		XA4-9170-609	F	2	SCREW	
14	*	XA4-9200-657	F	1	SCREW	

No.6

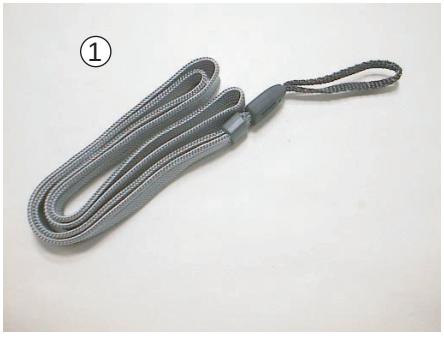
LCD/HINGE UNIT



Parts List

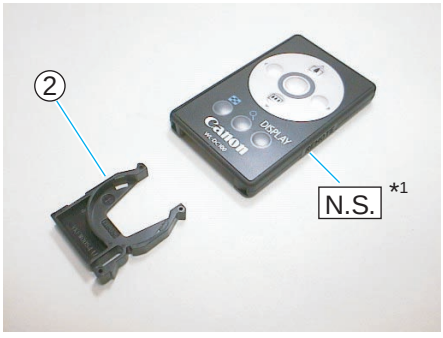
SYMBOL	NEW	PARTS NO.	CLASS	Q'TY	DISCRIPTION	REMARKS
1	*	CD1-3283-000	B	1	PLATE, LCD	
2	*	CD1-3182-000	B	1	COVER, LCD TOP	
3	*	CM1-1054-000	C	1	HINGE UNIT	
4	*	CD1-3189-000	C	1	COVER, HINGE	
5	*	CD1-3193-000	C	1	PLATE, NUT	
6	*	CD1-3181-000	B	1	COVER, LCD FRAME	
7	*	WG2-5199-001	C	1	PANEL, LCD	
8	*	CY1-6075-000	C	1	PCB ASS'Y, LCD	
9	*	CD1-3194-000	C	1	SHEET, LCD	
10	*	CM1-1073-000	C	1	BACK LIGHT UNIT	
11	*	CD1-3278-000	F	4	SCREW	
12		XA1-7170-307	F	2	SCREW	

Accessories

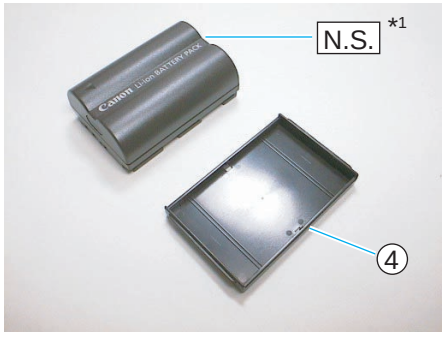


Neck Strap NS-DC100

Lens Cap



Wireless Controller WL-DC100*1



Battery Pack BP-511*2

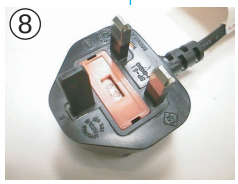
Compact Power*2
Adapter CA-560

PLUG TYPE

JPN

N

E



B

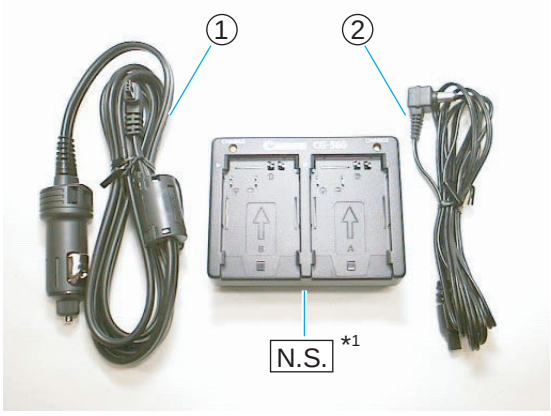
AS

*1 N.S. stands for No Stock
*2 Product available

Parts List

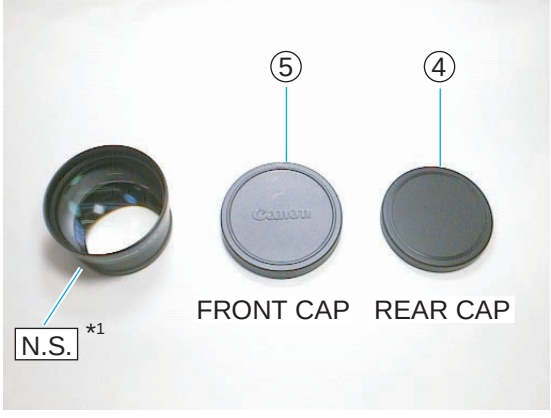
SYMBOL	NEW	PARTS NO.	CLASS	Q'TY	DISCRIPTION	REMARKS
1	*	C84-1029-000	B	1	STRAP, NECK	
2	*	CY1-6074-000	B	1	HOLDER, BATTERY	
3	*	C84-1028-000	B	1	LENS CAP UNIT	
4	*	DY1-8242-000	C	1	COVER, TERMINAL BP-511/BP-522	
5	*	D82-0641-000	C	1	CORD, AC(DOM)	
6	*	D82-0642-000	C	1	CORD, AC(N)	
7	*	D82-0643-000	C	1	CORD, AC(E)	
8	*	D82-0644-000	C	1	CORD, AC(B)	
9	*	D82-0645-000	C	1	CORD, AC(AS)	

Accessories



Charge Adapter/Car Battery Cable Kit CR-560*2

Wide Converter WC-DC58*2



Tele Converter TC-DC58*2

*1 N.S. stands for No Stock
*2 Product available

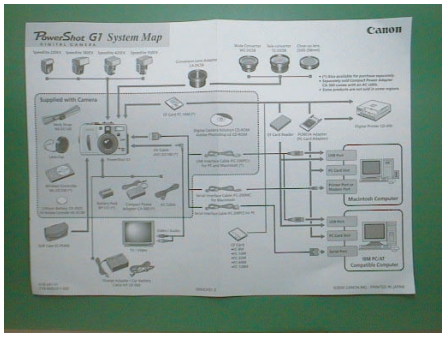
Parts List

SYMBOL	NEW	PARTS NO.	CLASS	Q'TY	DISCRIPTION	REMARKS
1	*	DY1-8243-000	C	1	CAR BATTERY CABLE CB-560	
2	*	DY1-8244-000	C	1	DC CABLE	
3	*	CY1-6071-000	B	1	CAP, FRONT	
4	*	CY1-6072-000	B	1	CAP, REAR	
5	*	CY1-6073-000	B	1	CAP, FRONT	

Accessories

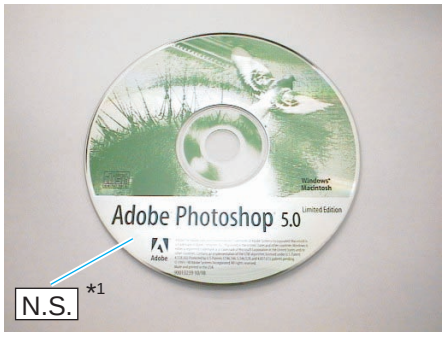
① Solution DISK CD-ROM

System Map

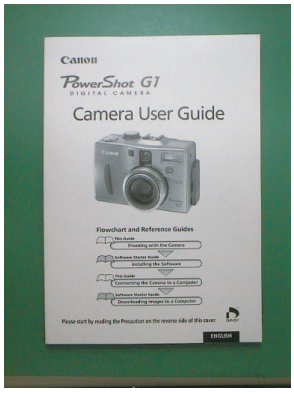


Language :
⑩ Japanese
⑪ English
⑫ French
⑬ Spanish

Adobe Photoshop LE CD-ROM

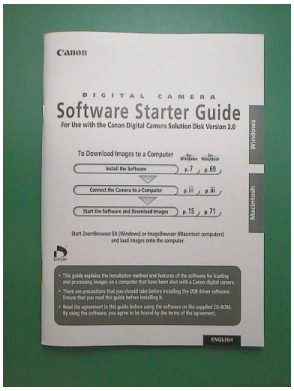


Camera User Guide



Language :
② Japanese
③ English
④ French
⑤ Spanish

Software Starter Guide



Language :
⑥ Japanese
⑦ English
⑧ French
⑨ Spanish

*1 N.S. stands for No Stock

Parts List

SYMBOL	NEW	PARTS NO.	CLASS	Q'TY	DISCRIPTION	REMARKS
1	*	CY1-6070-000	S	1	SOLUTION DISK CD-ROM	
2	*	CY8-9010-013	S	1	CAMERA USER GUIDE(J)	Japanese
3	*	CY8-9020-010	S	1	CAMERA USER GUIDE(E)	English
4	*	CY8-9030-009	S	1	CAMERA USER GUIDE(F)	French
5	*	CY8-9040-007	S	1	CAMERA USER GUIDE(S)	Spanish
6	*	CY8-9010-019	S	1	SOFTWARE STARTER GUIDE(J)	Japanese
7	*	CY8-9020-014	S	1	SOFTWARE STARTER GUIDE(E)	English
8	*	CY8-9030-013	S	1	SOFTWARE STARTER GUIDE(F)	French
9	*	CY8-9040-011	S	1	SOFTWARE STARTER GUIDE(S)	Spanish
10	*	CY8-9010-014	S	1	SYSTEM MAP(J)	Japanese
11	*	CY8-9020-011	S	1	SYSTEM MAP(E)	English
12	*	CY8-9030-010	S	1	SYSTEM MAP(F)	French
13	*	CY8-9040-008	S	1	SYSTEM MAP(S)	Spanish

Service Tools

① DIA BOND 1663B

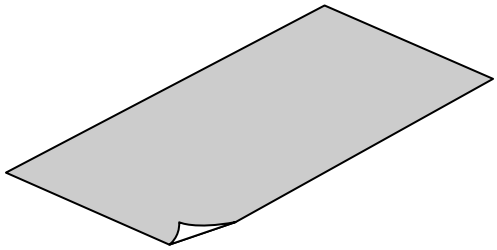
② CEMEDINE SUPER X (B)

③ THREE BOND 1401C

④ LOGENEST RAMBDA A-74

⑤ ADHESIVE TAPE SONY T4000

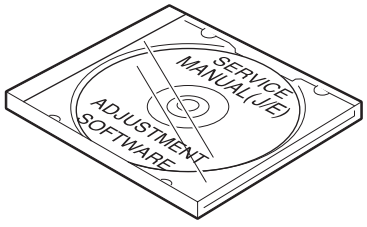
⑥ 18% GRAY CHART



⑦ C-12 FILTER

⑧ W-10 FILTER

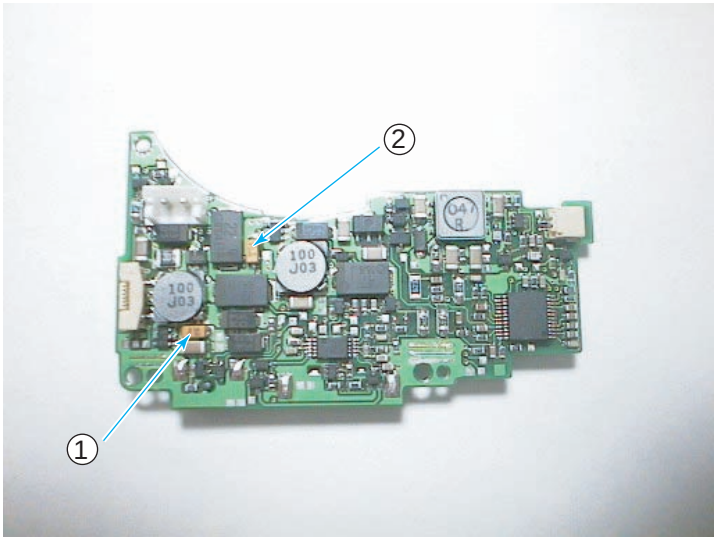
⑨ SERVICE MANUAL & ADJUSTMENT SOFTWARE CD-ROM



Parts List

SYMBOL	NEW	PARTS NO.	CLASS	Q'TY	DISCRIPTION	REMARKS
1	*	DY9-3008-000	Y	1	BOND, DIA BOND NO.1663 BLACK	200ml
2	*	CY9-8118-000	Y	1	BOND, CEMEDINE SUPER X 8008 BLACK	20ml
3	*	CY9-8011-000	Y	1	BOND, THREE BOND 1404C	200g
4	*	CY9-8102-000	Y	1	LUBE, LOGENEST RAMBDA A-74	80g
5	*	CY4-6012-000	Y	1	ADHESIVE TAPE, SONY T4000	6mm x 50m roll
6	*	CY4-6016-000	Y	1	CHART, 18% GRAY	1.5m x 3m
7	*	DY9-2029-000	Y	1	FILTER, C-12	
8	*	CY9-1543-000	Y	1	FILTER, W-10	
9	*	CY8-4368-031	Y	1	CD-ROM, SERVICE MANUAL(J/E)	including Adjustment Software

Fuse



DC/DC CONVERTER PCB ASS'Y

Parts List

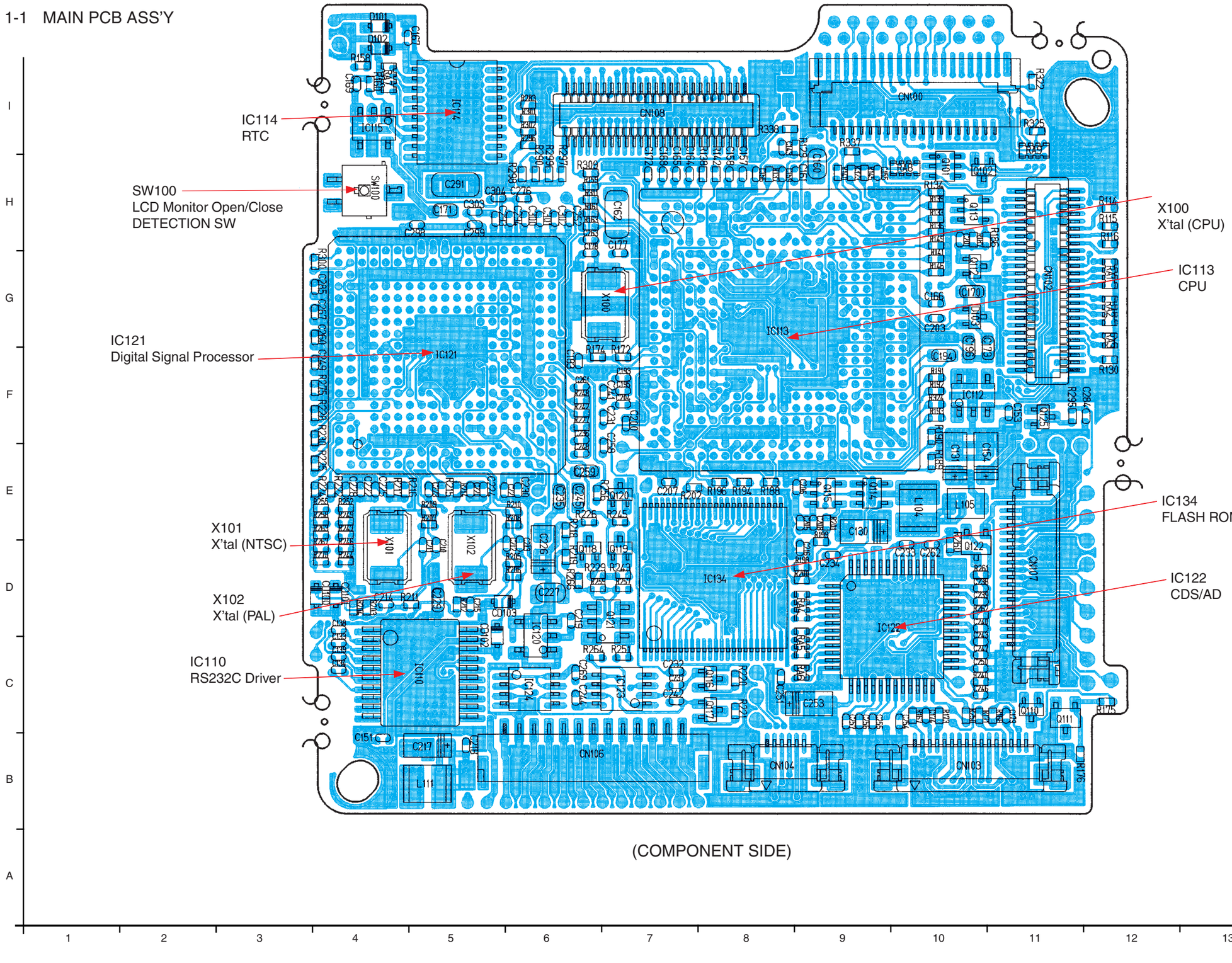
SYMBOL	NEW	PARTS NO.	CLASS	Q'TY	DISCRIPTION	REMARKS
1	*	CY4-6069-000	C	1	FUSE,DAITO KE25	F01
2	*	CY4-6070-000	C	1	FUSE,DAITO KE32	F02

ELECTRIC DIAGRAMS

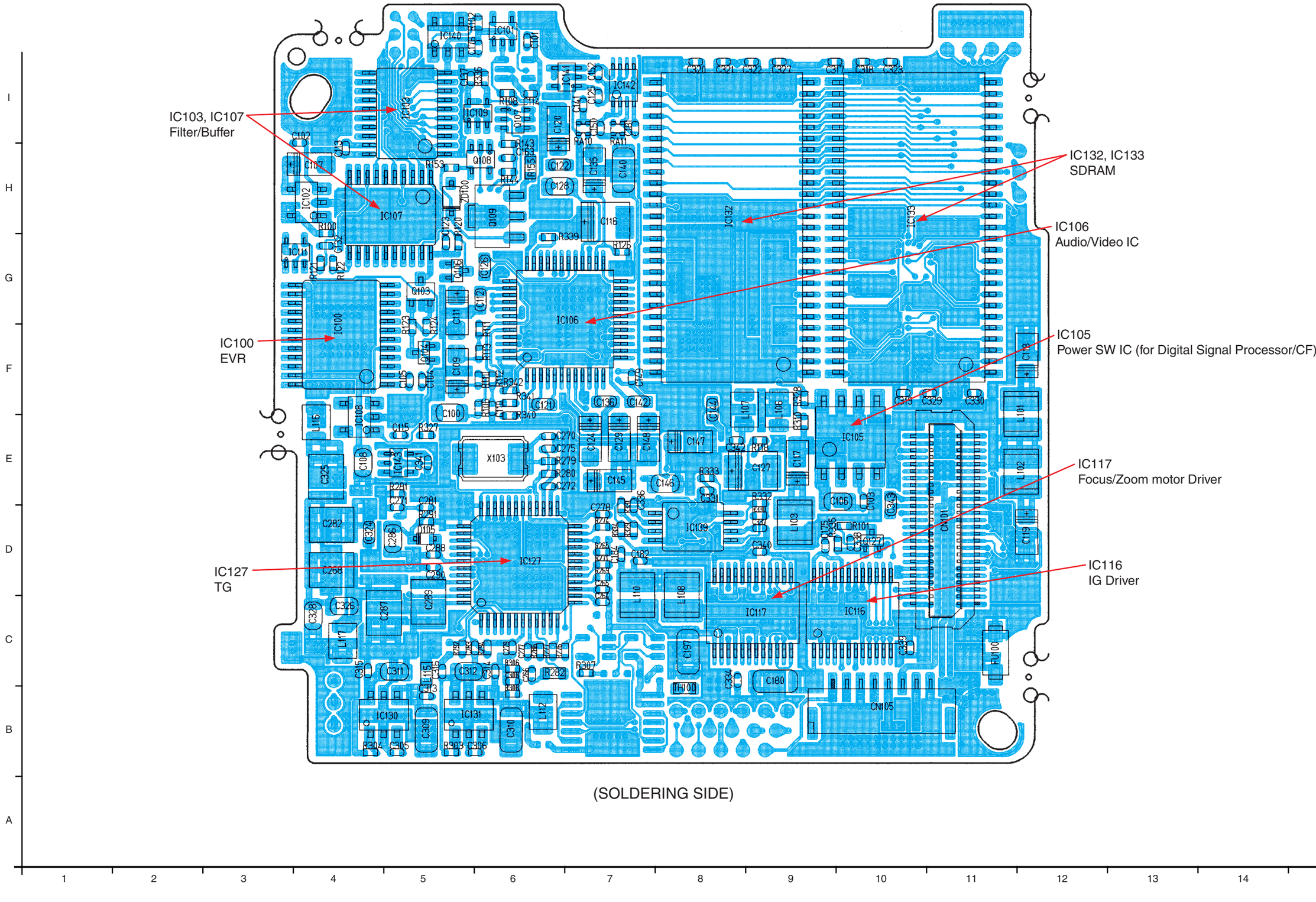
1 PATTERN DIAGRAMS E1
1-1 MAIN PCB ASS'Y E1
1-2 LCD PCB ASS'Y E3
1-3 TOP MODULE UNIT E5
1-4 BUTTON PCB ASS'Y E7
1-5 JACK PCB ASS'Y E9
1-6 CF UNIT E10
1-7 ACCESSORY SHOE FPC E11
1-8 DC/DC CONVERTER PCB ASS'Y E13
2 INTERCONNECTION DIAGRAM E15
3 BLOCK DIAGRAMS E17
3-1 OVERALL E17
3-2 MAIN PCB ASS'Y (1/3) E18
3-3 MAIN PCB ASS'Y (2/3) E19
3-4 MAIN PCB ASS'Y (3/3) E20
3-5 DC/DC CONVERTER PCB ASS'Y E21
3-6 LCD PCB ASS'Y E22

1 PATTERN DIAGRAMS

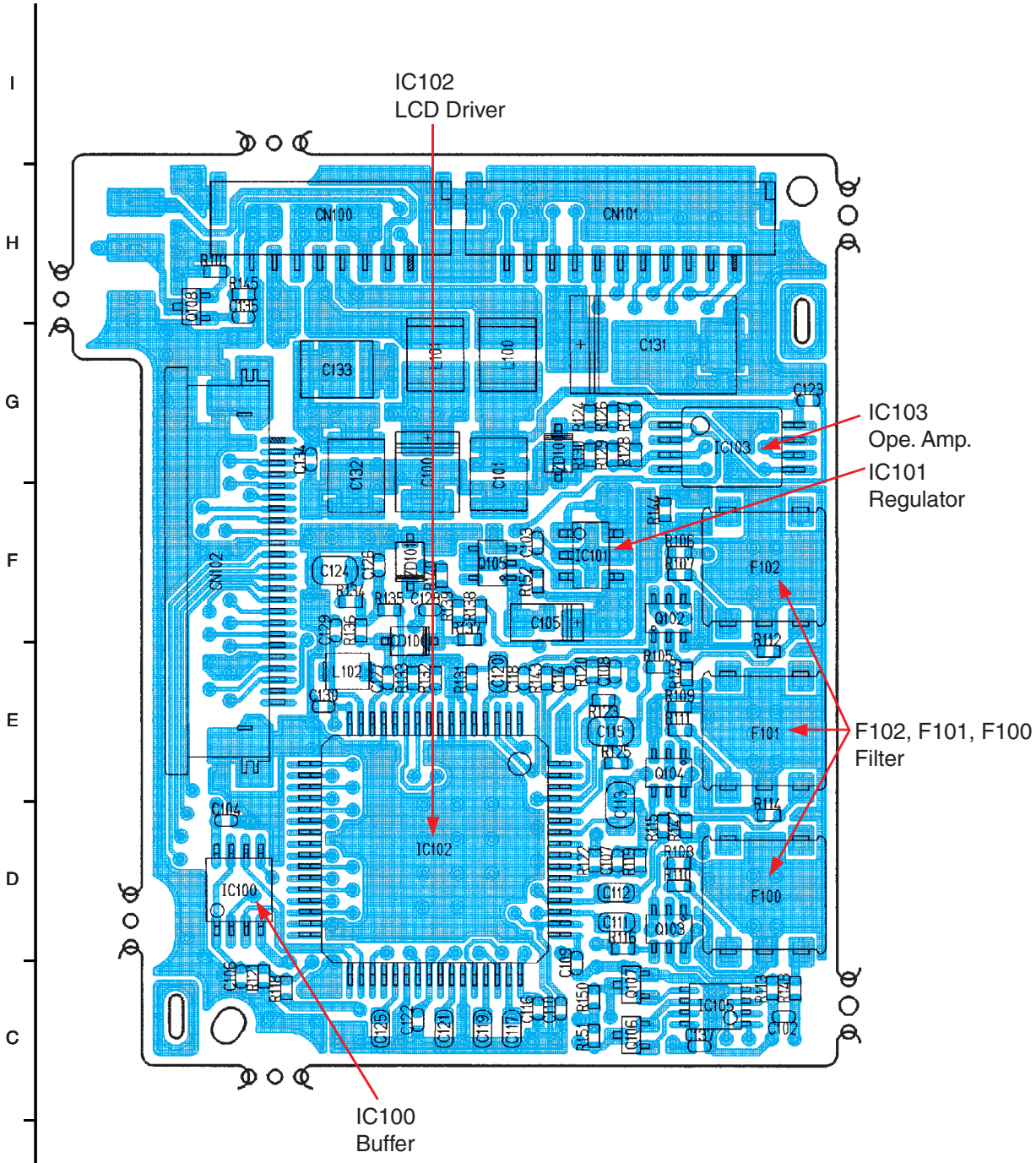
1-1 MAIN PCB ASS'Y

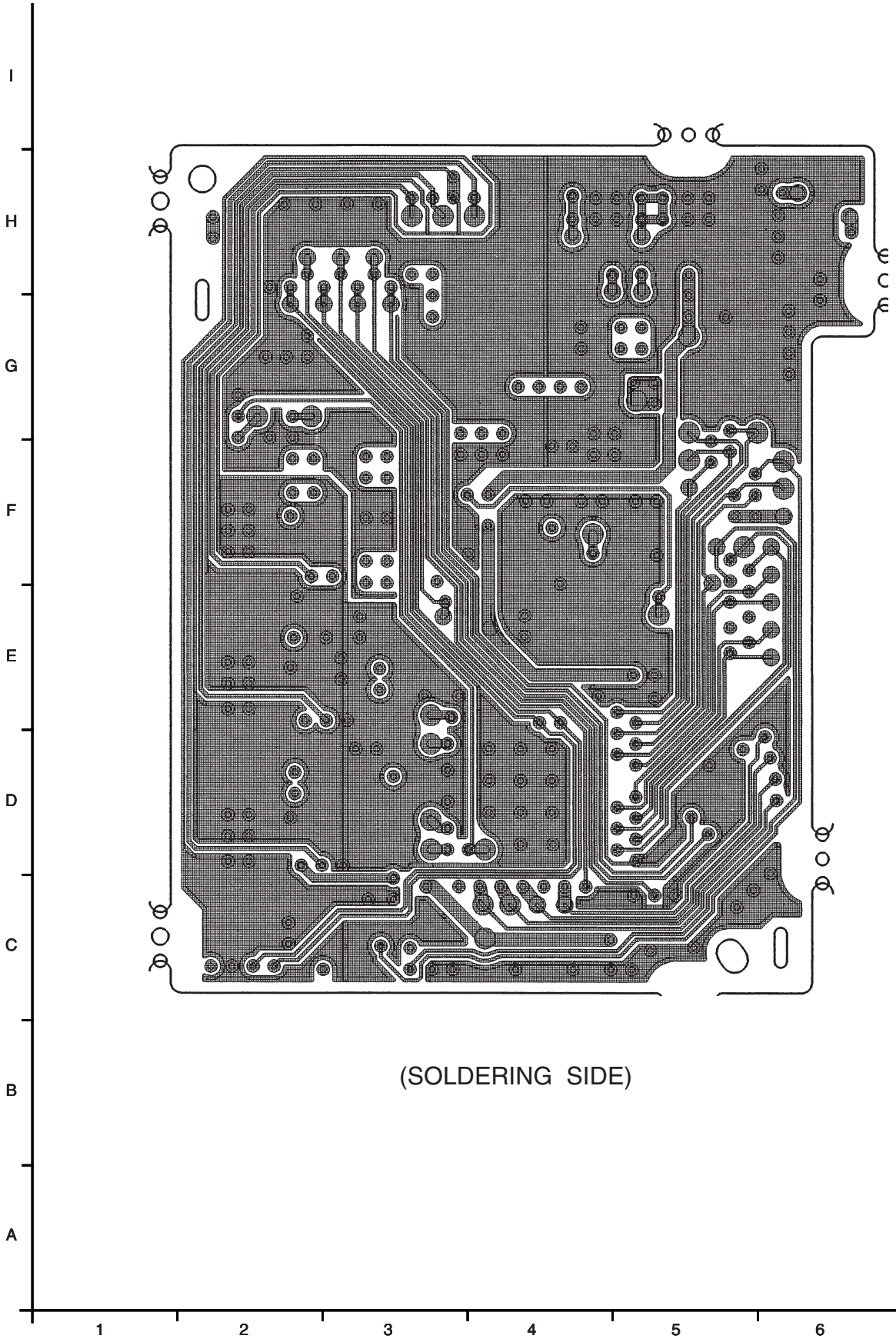


(COMPONENT SIDE)

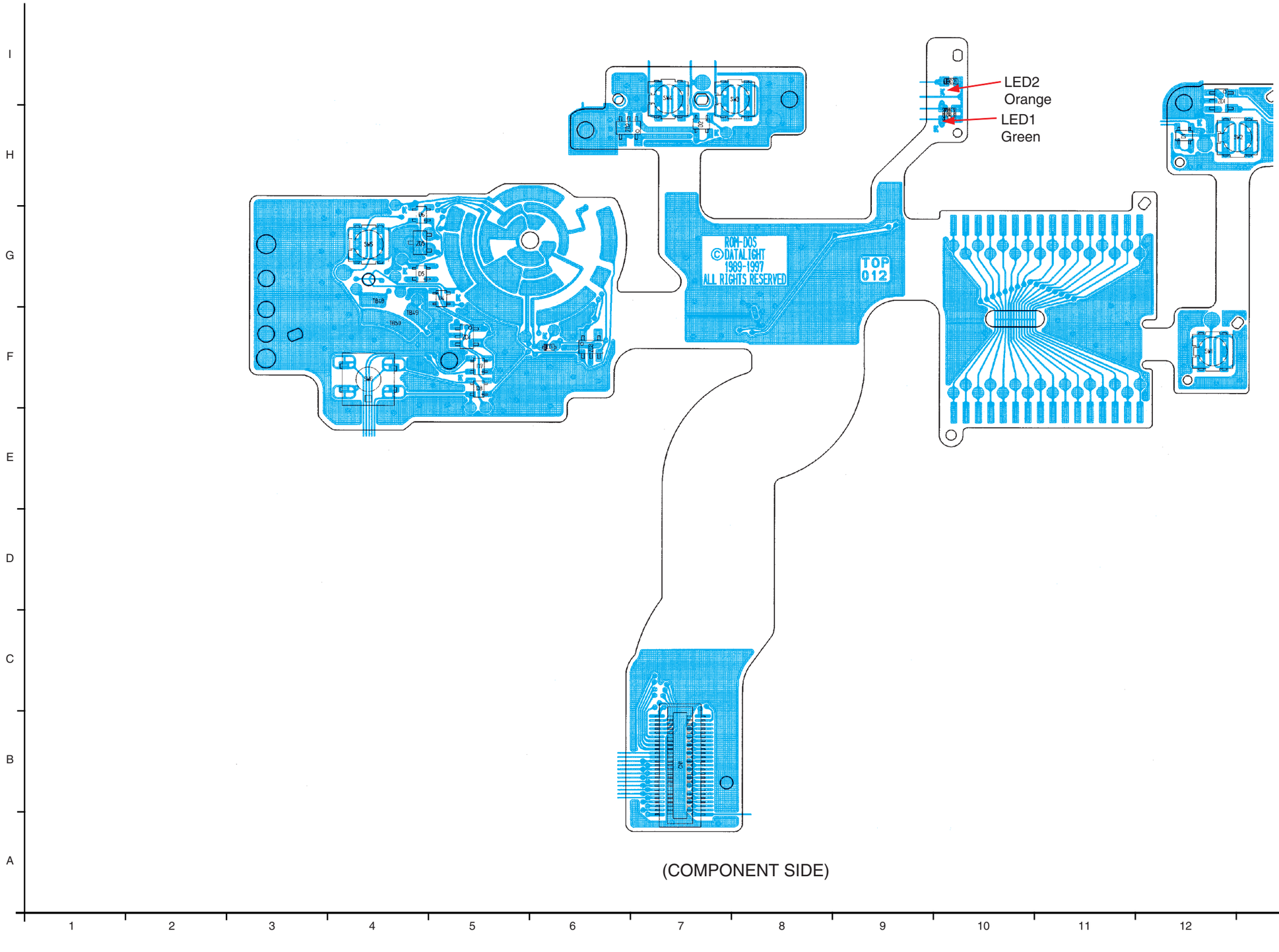

IC103, IC107
Filter/Buffer
IC100
EVR
IC127
TG
IC132, IC133
SDRAM
IC106
Audio/Video IC
IC105
Power SW IC (for Digital Signal Processor/CF)
IC117
Focus/Zoom motor Driver
IC116
IG Driver
(SOLDERING SIDE)
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
E2

1-2 LCD PCB ASS'Y

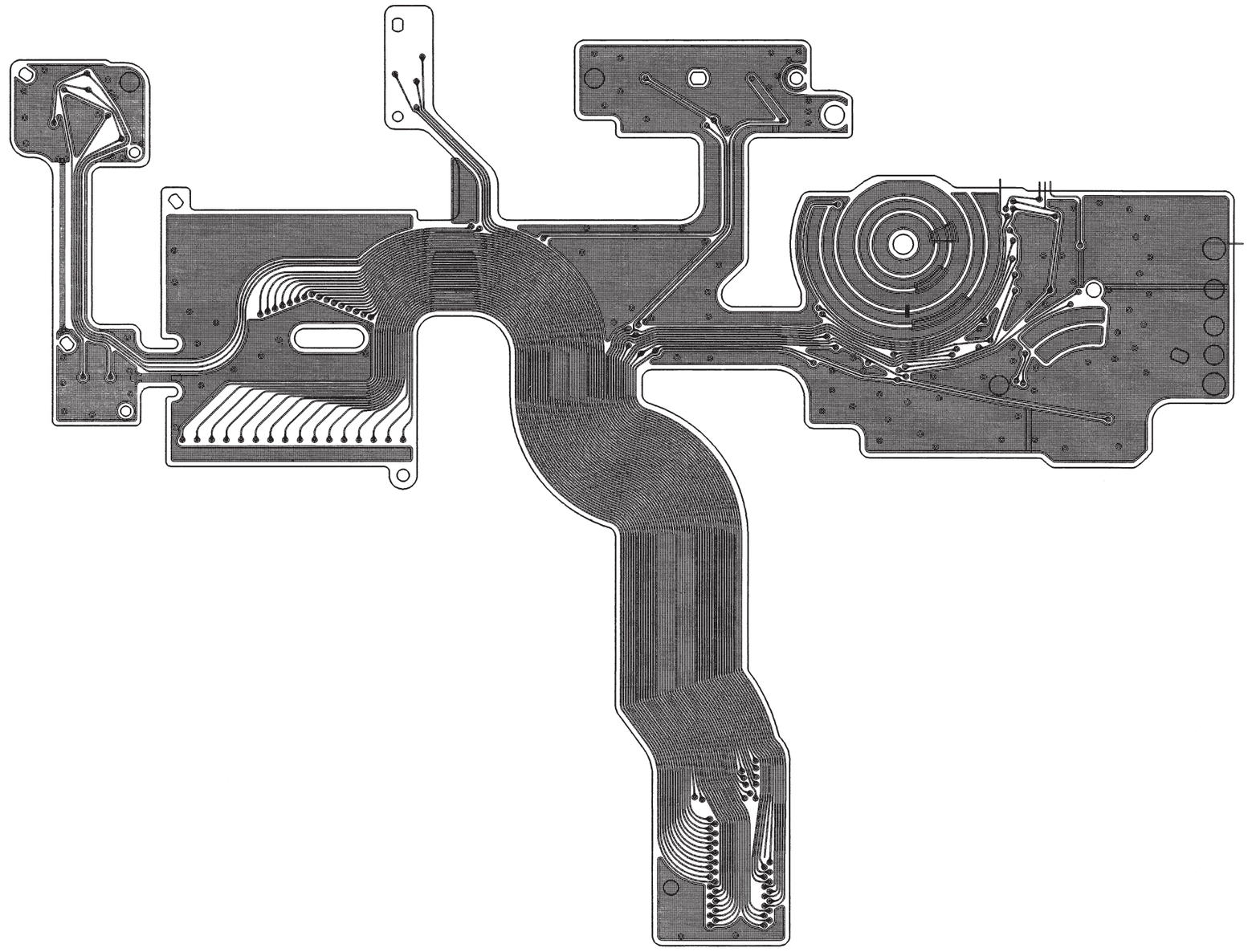




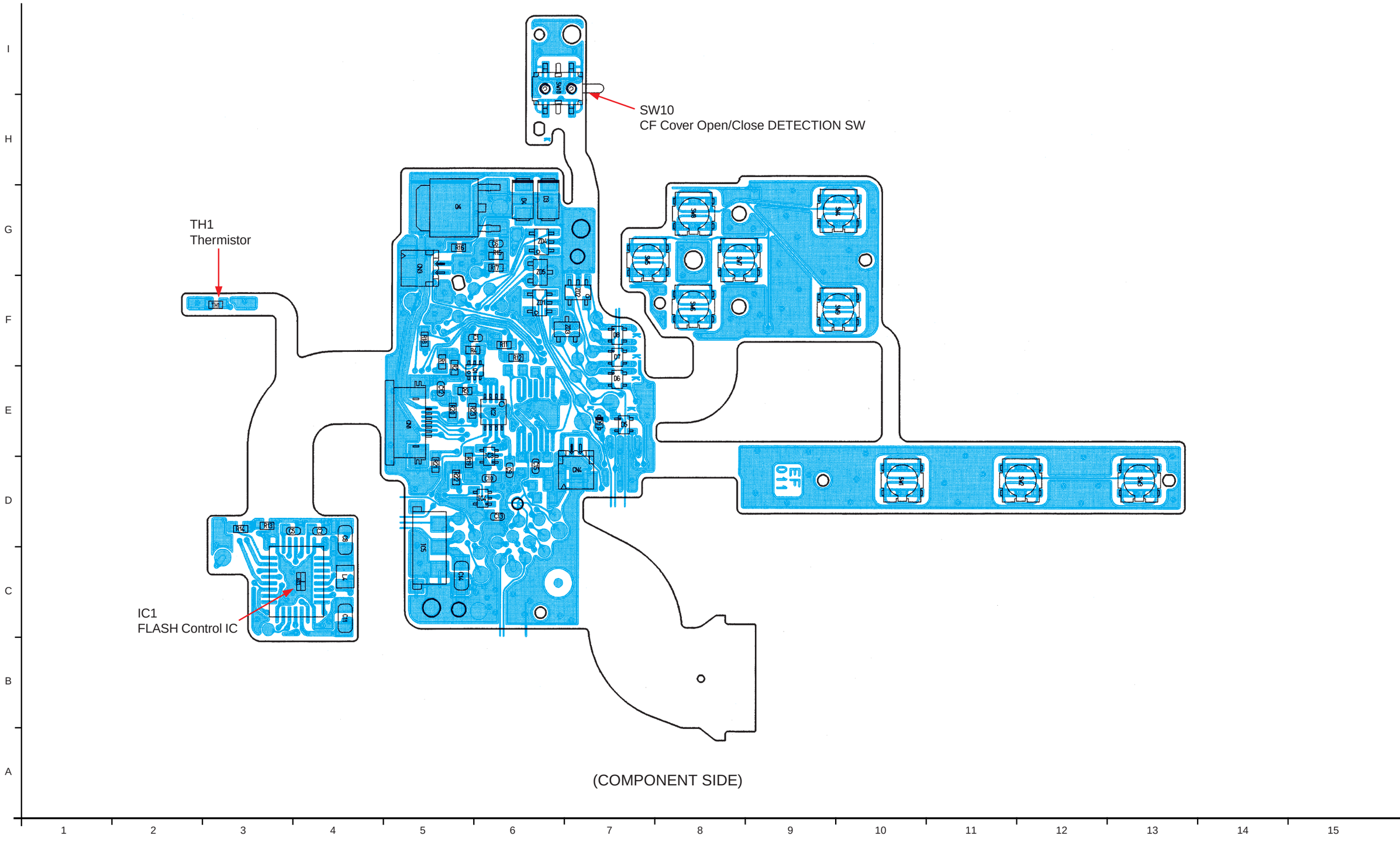
(SOLDERING SIDE)

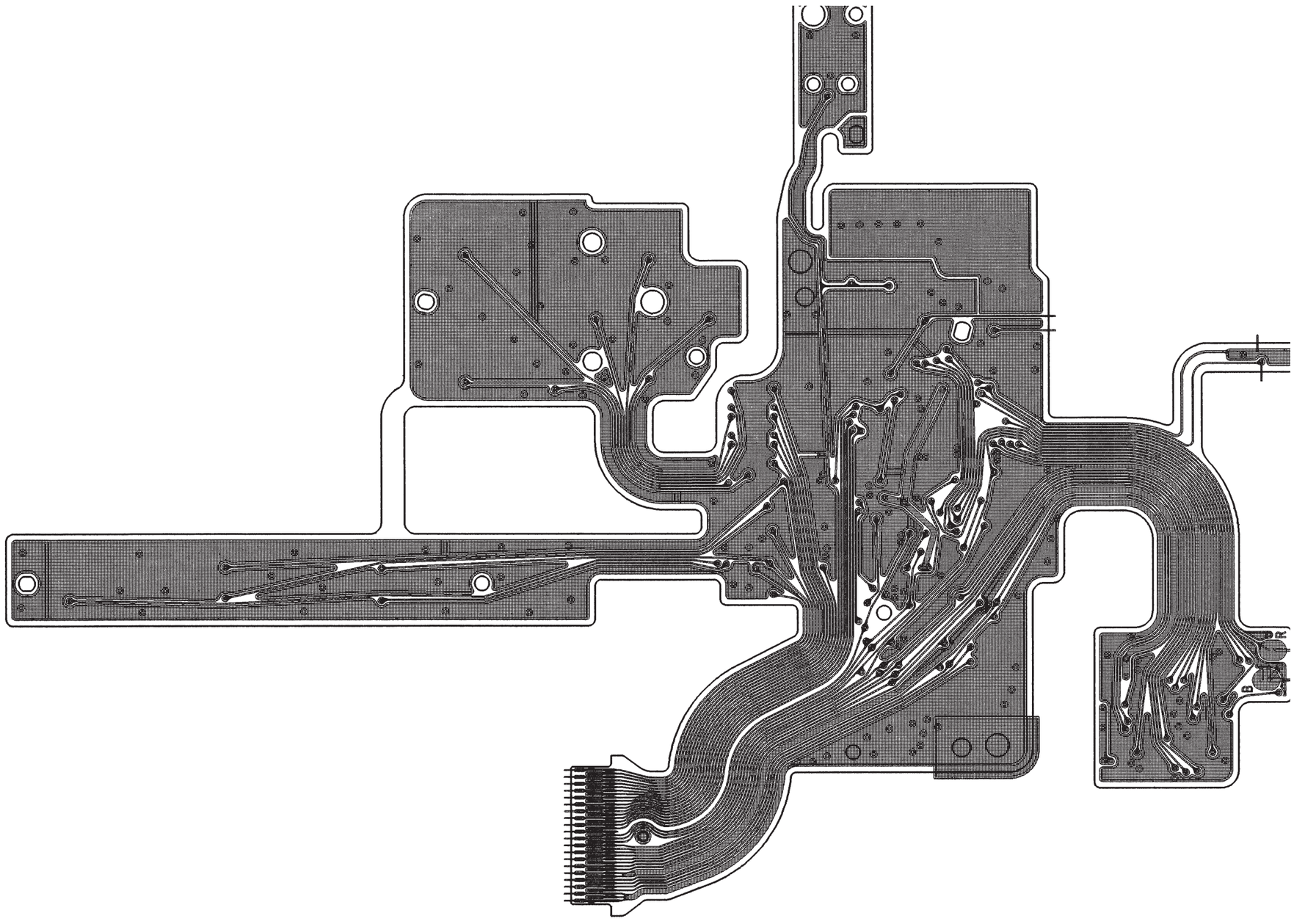


(COMPONENT SIDE)



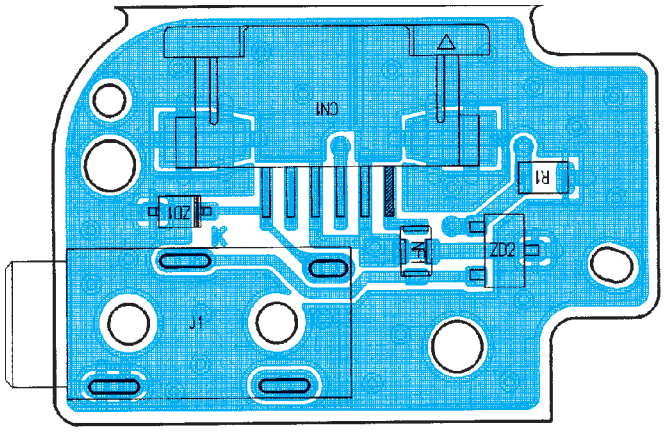
(SOLDERING SIDE)


SW10
CF Cover Open/Close DETECTION SW
TH1
Thermistor
IC1
FLASH Control IC
(COMPONENT SIDE)

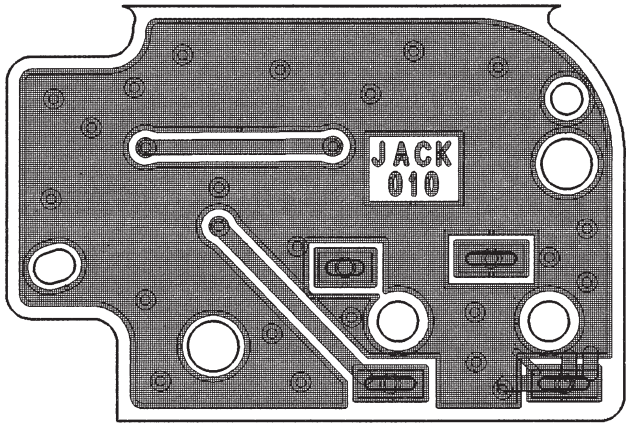


(SOLDERING SIDE)

1-5 JACK PCB ASS'Y

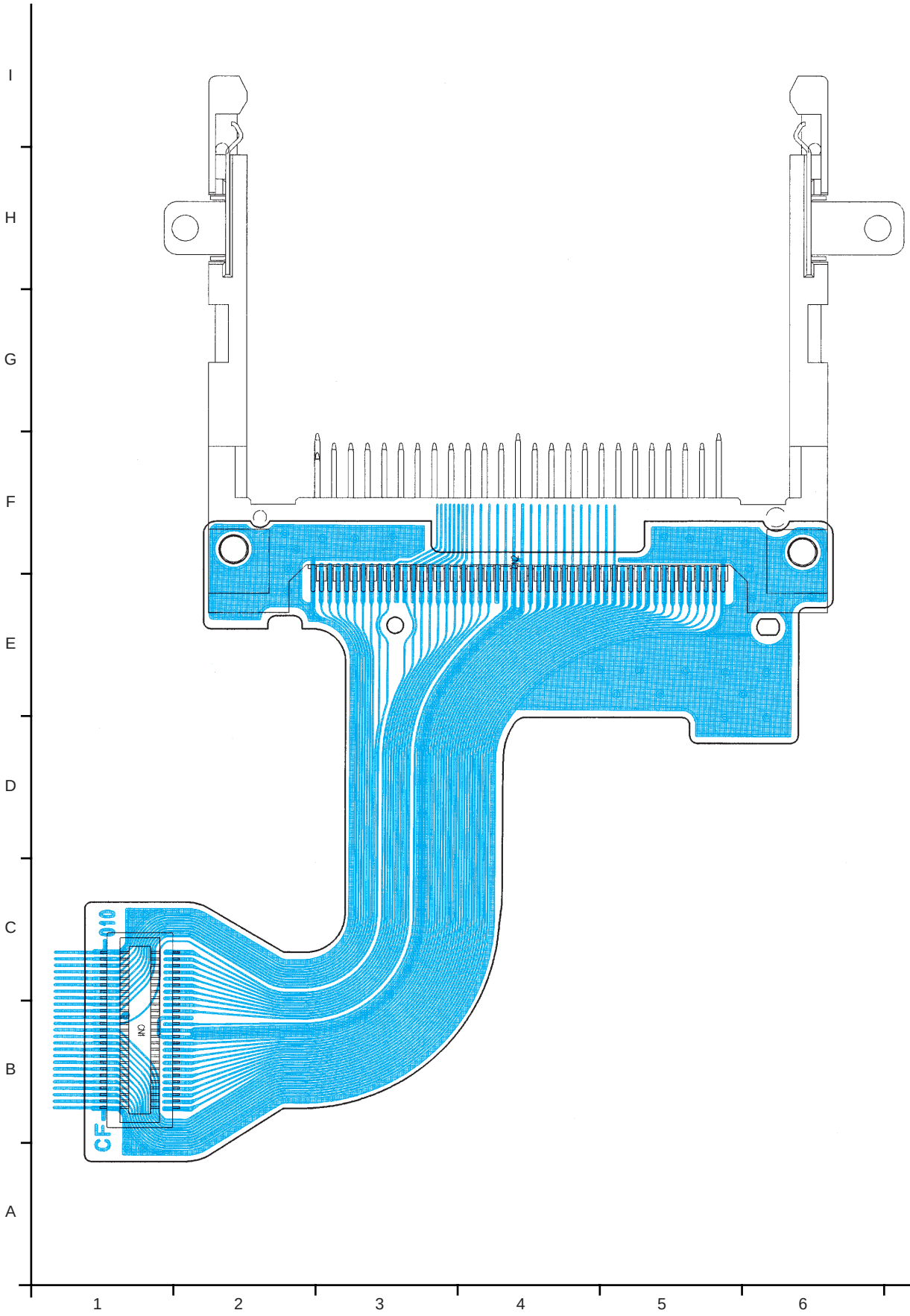


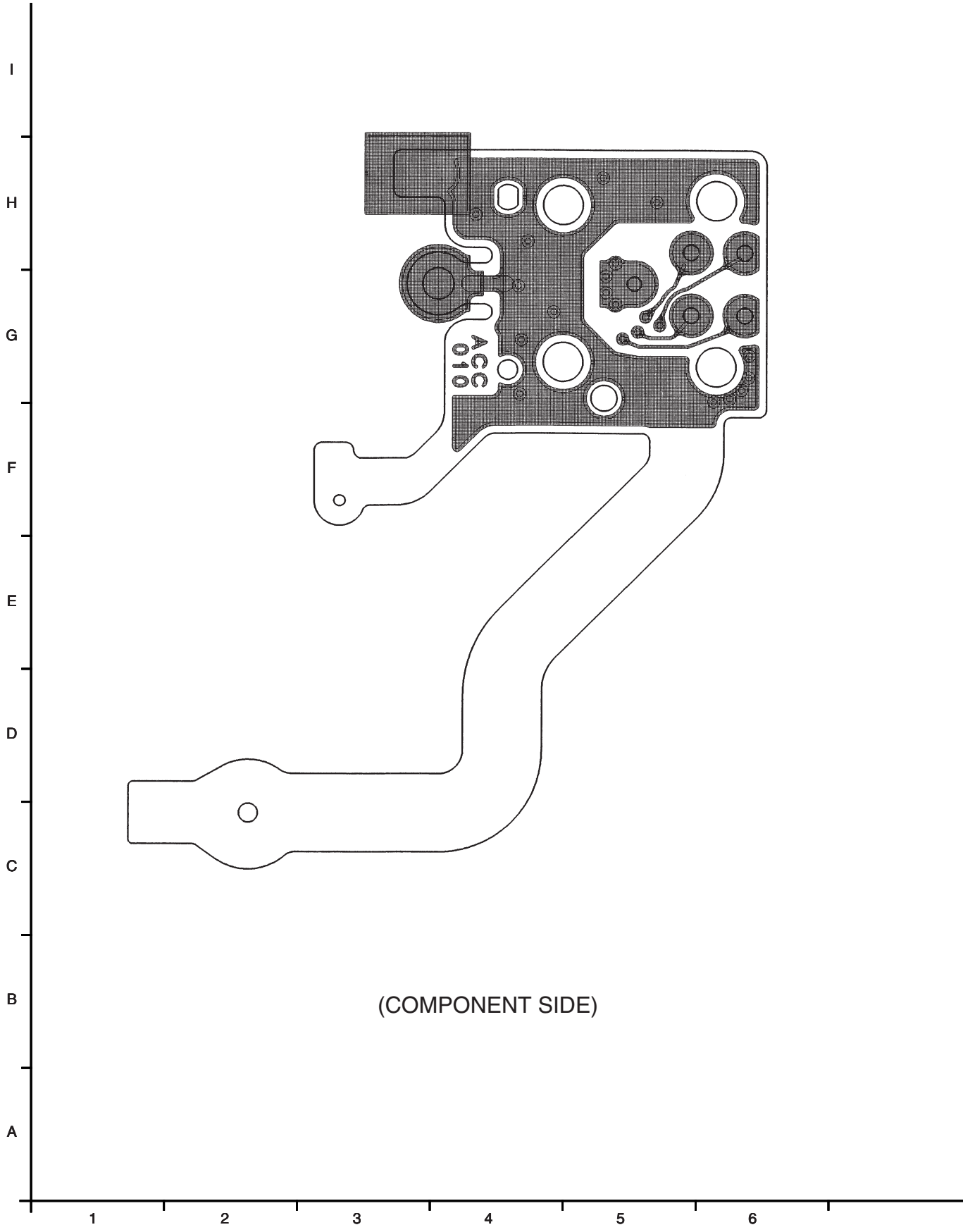
(COMPONENT SIDE)



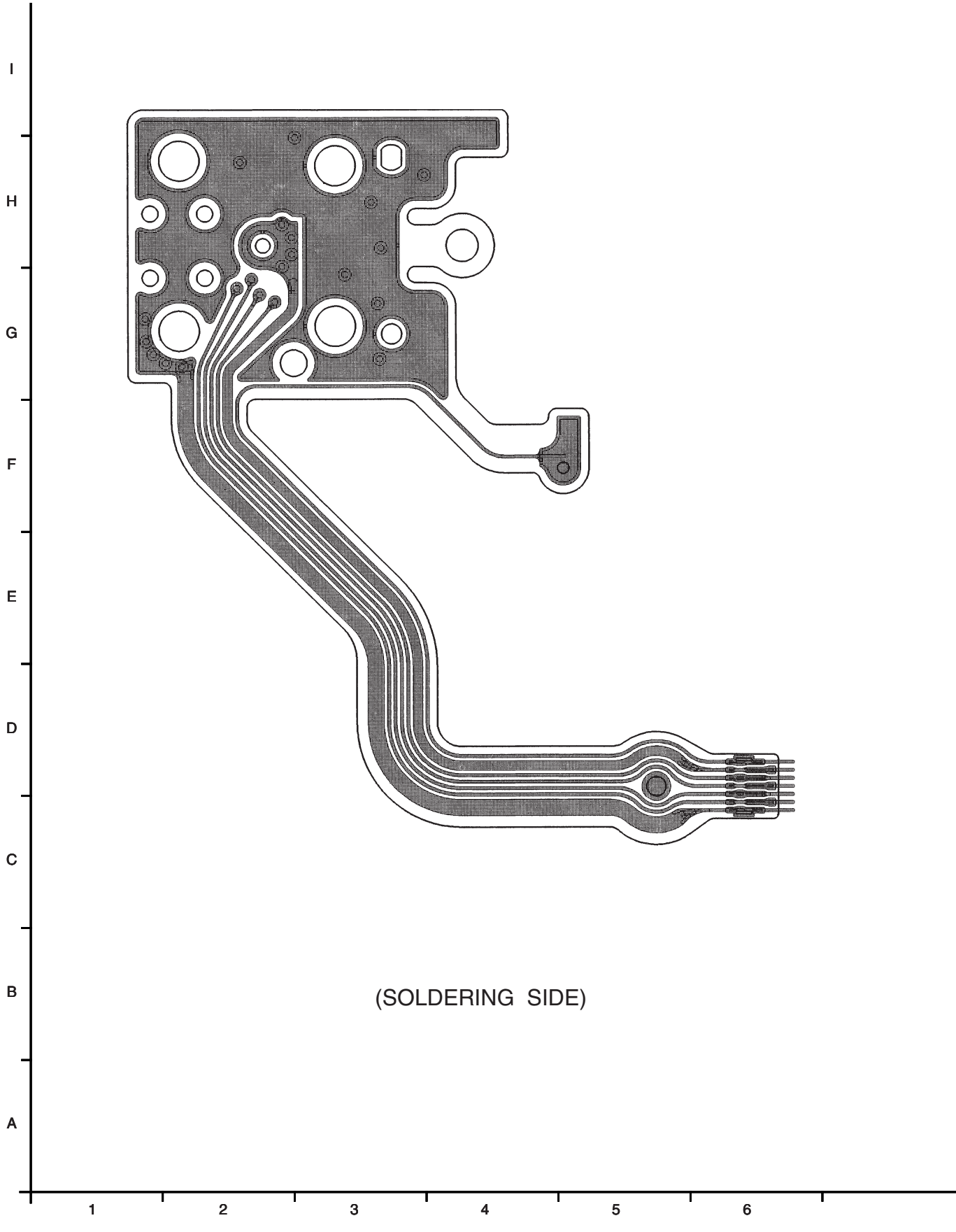
(SOLDERING SIDE)

1-6 CF UNIT



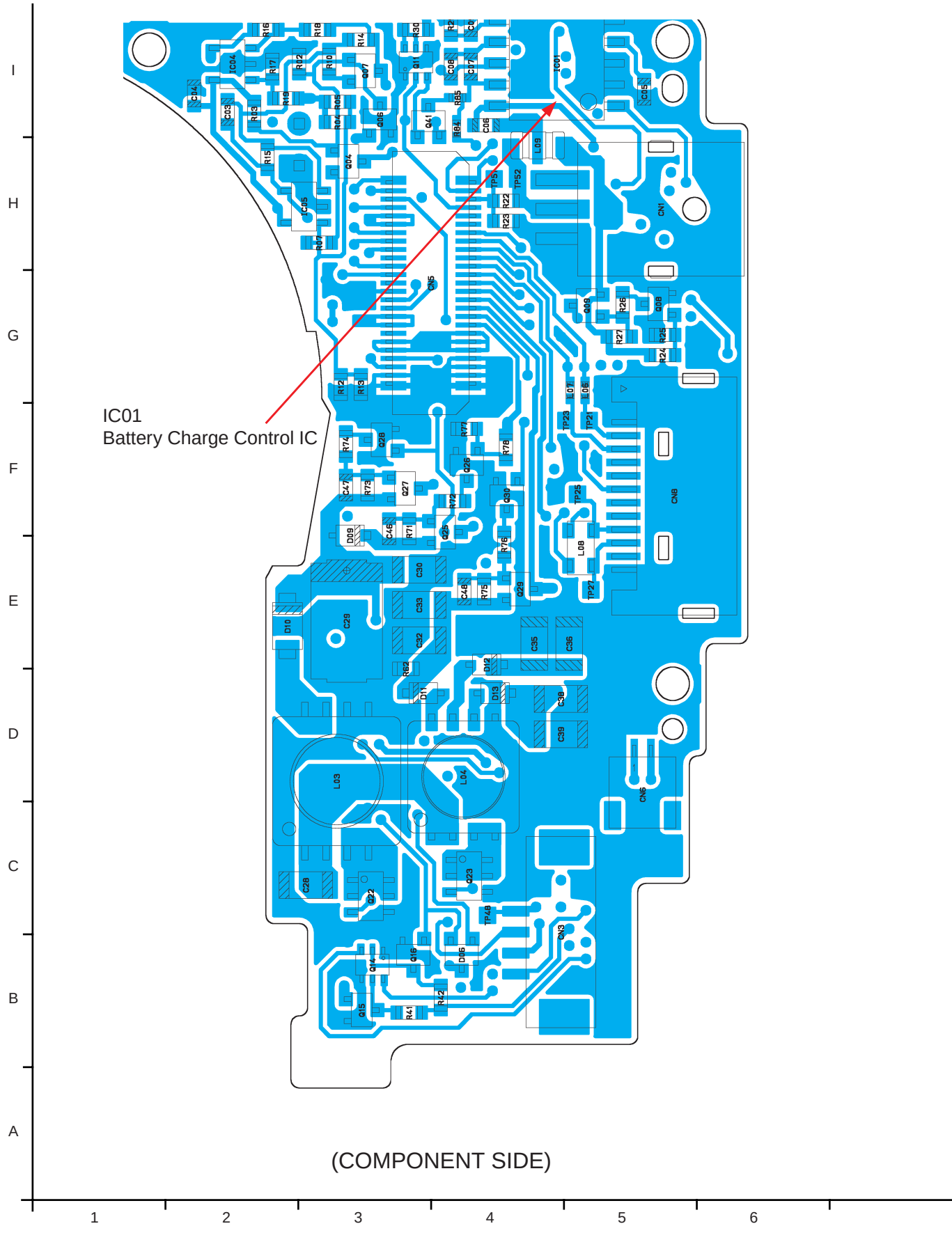


(COMPONENT SIDE)

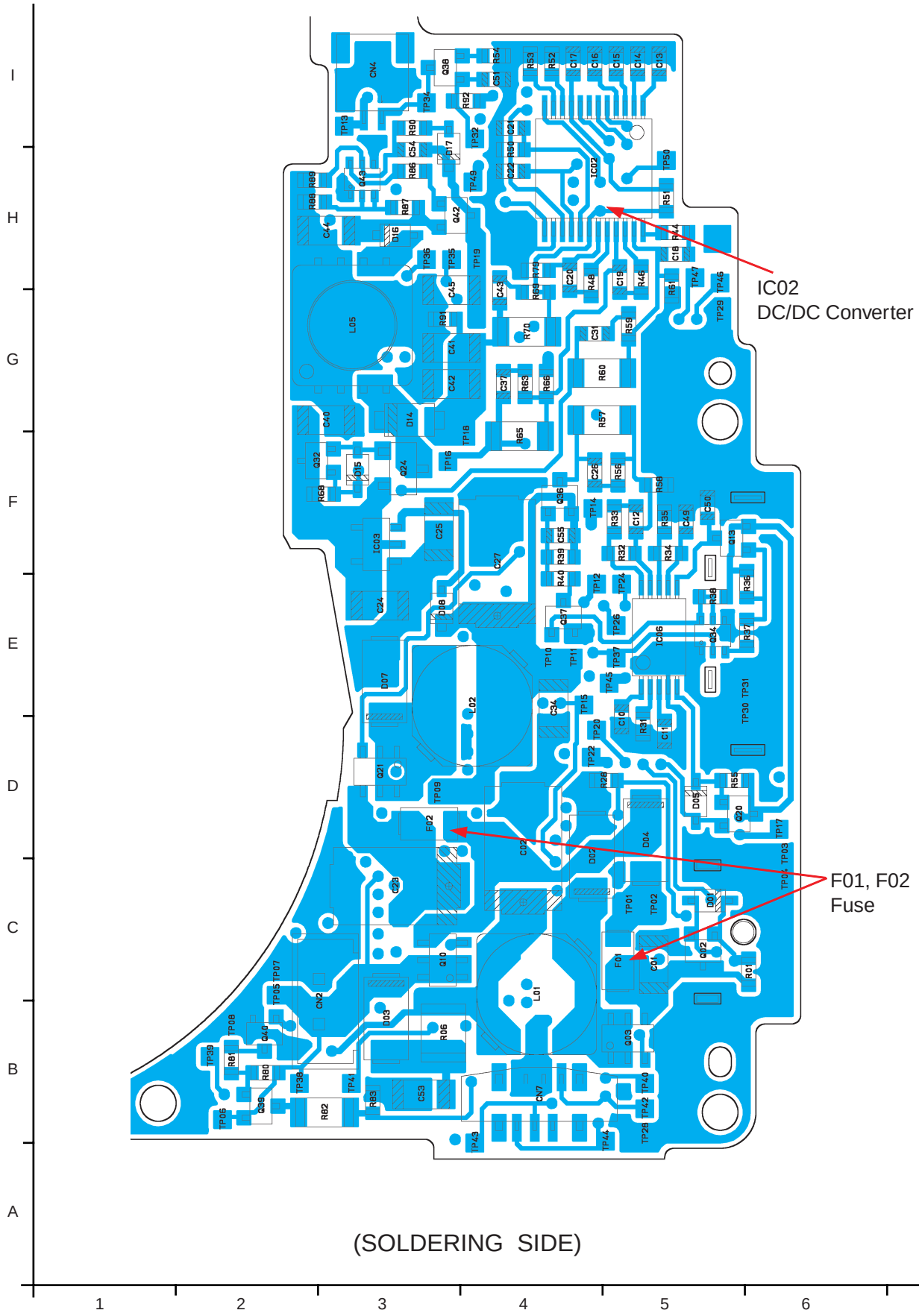


(SOLDERING SIDE)

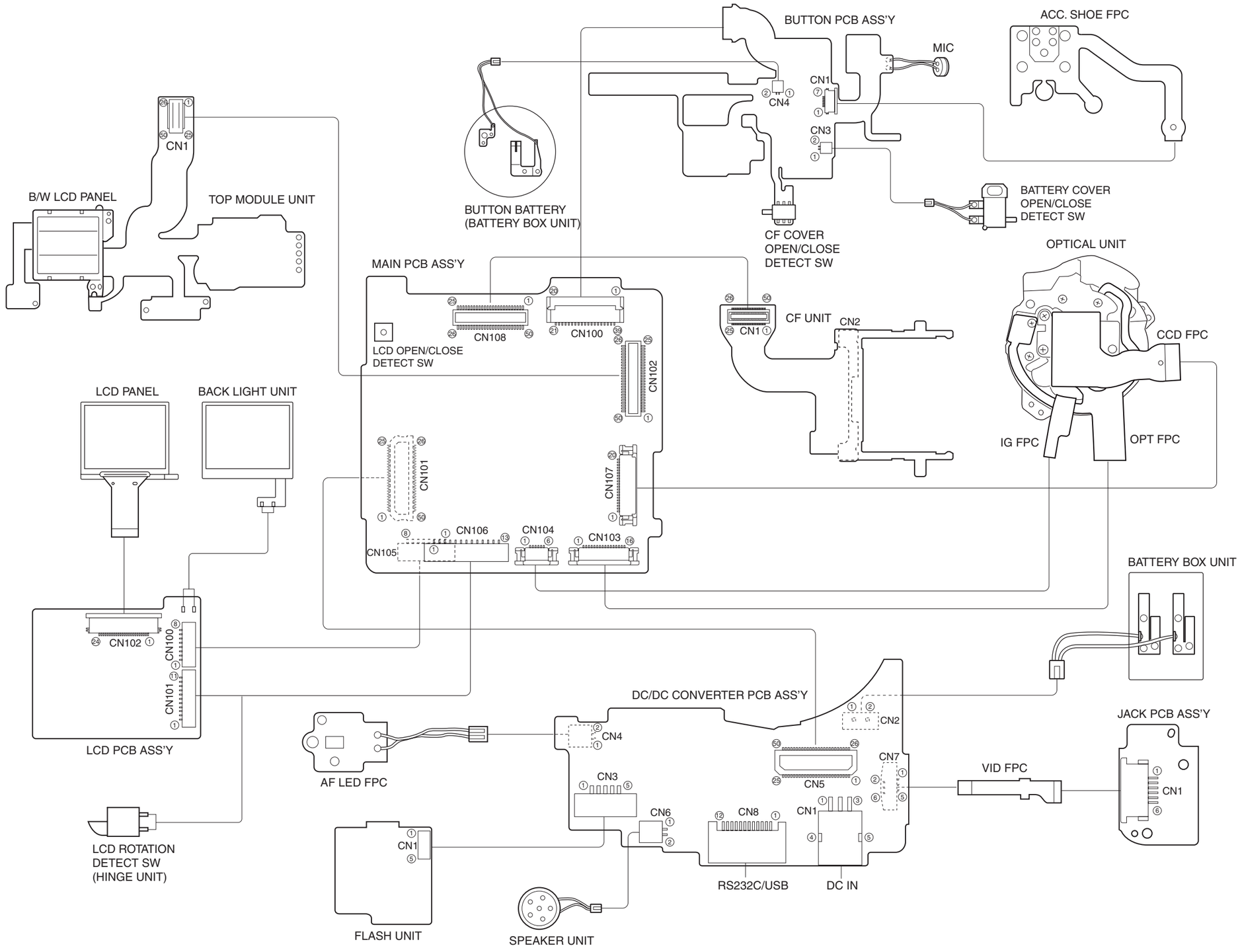
1-8 DC/DC CONVERTER PCB ASS'Y



(COMPONENT SIDE)


IC02
DC/DC Converter
F01, F02
Fuse
(SOLDERING SIDE)
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6

2 INTERCONNECTION DIAGRAM



CONNECTORS

LCD PCB ASS'Y	
CN100	
1	LCD_BRT
2	LCD_21V
3	GND
4	LCD_12V
5	LCD_5V
6	LCD_15V
7	VDD0
8	GND
CN101	
1	CSV
2	CSH
3	VHAFC
4	LCD_CONT_CS
5	P_DET_02
6	Serial_D2L
7	Serial_CLK
8	Y+S
9	R-Y
10	GND
11	B-Y
CN102	
1	Not Connected
2	HVDD
3	CKH1
4	CKH2
5	STH
6	XSTH
7	CSH
8	PCG
9	XPCG
10	VSS
11	G
12	R
13	B
14	PCD
15	XENB
16	ENB
17	CSV
18	XSTV
19	STV
20	VVDD
21	CKV2
22	CKV1
23	COM
24	Not Connected

JACK PCB ASS'Y	
CN1	
1	VIDEO_OUT
2	GND
3	AUDIO
4	GND
5	Not Connected
6	VIDEO_SW

FLASH UNIT	
CN1	
1	IGBT
2	VBAT
3	SENSE
4	OSC
5	GND

BUTTON PCB ASS'Y	
CN1	
1	EF_XGND
2	AVEF
3	EF_STOP
4	EF_ID
5	EF_CCC
6	EF_X
7	STRB_SW
CN3	
1	BAT_OPEN
2	GND
CN4	
1	Vlitium
2	GND

TOP MODULE UNIT	
CN1	
1	LCD_SEG(21)
2	LCD_SEG(22)
3	LCD_SEG(23)
4	LCD_SEG(24)
5	LOCK_P_DET
6	MATCOM(1)
7	MATCOM(2)
8	MATSW(1)
9	MATSW(2)
10	MATSW(3)
11	MATSW(4)
12	MATSW(5)
13	MATSW(6)
14	MATSW(7)
15	Not Connected
16	Not Connected
17	GND
18	AFLED 01
19	AFLED 22
20	AFLED 21
21	VCPU
22	MATSW(8)
23	LCD_C0M(1)
24	LCD_SEG(26)
25	LCD_SEG(25)
26	LCD_SEG(20)
27	LCD_SEG(19)
28	LCD_SEG(18)
29	LCD_SEG(17)
30	LCD_SEG(16)
31	LCD_SEG(15)
32	LCD_SEG(14)
33	LCD_SEG(13)
34	LCD_SEG(3)
35	LCD_SEG(2)
36	LCD_SEG(27)
37	LCD_SEG(12)
38	LCD_SEG(11)
39	LCD_SEG(10)
40	LCD_SEG(9)
41	LCD_SEG(8)
42	LCD_SEG(7)
43	LCD_SEG(6)
44	LCD_SEG(5)
45	LCD_SEG(4)
46	LCD_SEG(3)
47	LCD_SEG(2)
48	LCD_SEG(1)
49	LCD_SEG(0)
50	LCD_COM(0)

MAIN PCB ASS'Y	
CN100	
1	Vlitium
2	MATSW(7)
3	MATCOM(1)
4	MATSW(8)
5	MATCOM(3)
6	MATSW(6)
7	MATSW(1)
8	MATSW(4)
9	MATSW(3)
10	MATSW(2)
11	MATSW(5)
12	DAC2
13	CF_OPEN
14	XTRIG
15	BAT_OPEN
16	THRM
17	MIC_IN
18	GND
19	DAC1
20	STSP
21	STROBO_STP
22	EFAD
23	SENSE
24	STRB_DET_SW
25	SCLK
26	OSC
27	BCLK
28	MOSI
29	MISO
30	/SPCR
31	REG 5.0V(E2)
32	REG 5.0V(E2)
33	CSEF0
34	CSEF1
35	REMOTE
36	REG5.0V(byVBAT)
37	GND
38	GND
39	GND
CN101	
1	PS
2	I_SENSE
3	DC_J_DET
4	CHG_CS
5	Not Connected
6	Not Connected
7	REDCONT
8	RX
9	TX
10	E5LAT
11	E3LAT
12	E2LAT
13	VDD3(12.0V)
14	VDD2(15.0V)
15	VDD3(5.0V)
16	VDD5(21V)
17	VDD2(-7.5V)
18	VDD3(15.0V)
19	VDD0(3.3V)
20	VDD0(3.3V)
21	VDD0(3.3V)
22	GND
23	GND
24	GND
25	GND
26	VC_DET
27	SENSE
28	OSC
29	IGBT
30	VBAT
31	VBAT
33	D-
34	D+
35	RESERVED
36	BAT_SENSE
37	/E0LAT
38	Not Connected
39	GND
40	SP+
41	SP-
42	VDD2(5.5V)
43	VDD2(5.5V)
44	Not Connected
45	VDD0(3.3V)
46	VDD0(3.3V)
47	VIDEO
48	LINEOUT
49	GND
50	GND

MAIN PCB ASS'Y	
CN102	
1	LCD_SEG(21)
2	LCD_SEG(22)
3	LCD_SEG(23)
4	LCD_SEG(24)
5	LOCK_P_DET
6	MATCOM(1)
7	MATCOM(2)
8	MATSW(1)
9	MATSW(2)
10	MATSW(3)
11	MATSW(4)
12	MATSW(5)
13	MATSW(6)
14	MATSW(7)
15	Not Connected
16	Not Connected
17	GND
18	AFLED 01
19	AFLED 22
20	AFLED 21
21	VCPU
22	MATW(8)
23	LCD_COM(1)
24	LCD_SEG(26)
25	LCD_SEG(25)
26	LCD_SEG(20)
27	LCD_SEG(19)
28	LCD_SEG(18)
29	LCD_SEG(17)
30	LCD_SEG(16)
31	LCD_SEG(15)
32	LCD_SEG(14)
33	LCD_SEG(13)
34	LCD_SEG(3)
35	LCD_SEG(2)
36	LCD_SEG(27)
37	LCD_SEG(12)
38	LCD_SEG(11)
39	LCD_SEG(10)
40	LCD_SEG(9)
41	LCD_SEG(8)
42	LCD_SEG(7)
43	LCD_SEG(6)
44	LCD_SEG(5)
45	LCD_SEG(4)
46	LCD_SEG(3)
47	LCD_SEG(2)
48	LCD_SEG(1)
49	LCD_SEG(0)
50	LCD_COM(0)
CN103	
1	Not Connected
2	ired(zoom)
3	VCC(zoom)
4	Sens(zoom)
5	Focus 4(/b)
6	Focus 2(/a)
7	Focus 3(b)
8	Focus 1(a)
9	Zoom 3(b)
10	Zoom 1(a)
11	Zoom 2(/a)
12	Zoom 4(/b)
13	ired(focus)
14	VCC(focus)
15	Sens(focus)
16	Not Connected
CN104	
1	Not Connected
2	ig 1
3	ig 3
4	ig 2
5	ig 4
6	Not Connected
CN105	
1	BKL_BRT
2	BKL_21V
3	GND
4	LCD_12V
5	LCD_5V
6	LCD_15V
7	VDD0
8	GND
CN106	
1	ROT_DET
2	ROT_GND
3	CSV
4	CSH
5	VHAFC
6	LCD_CONT_CS
7	P_DET_02
8	Serial_D2L
9	Serial_CLK
10	Y+S
11	R-Y
12	GND
13	B-Y

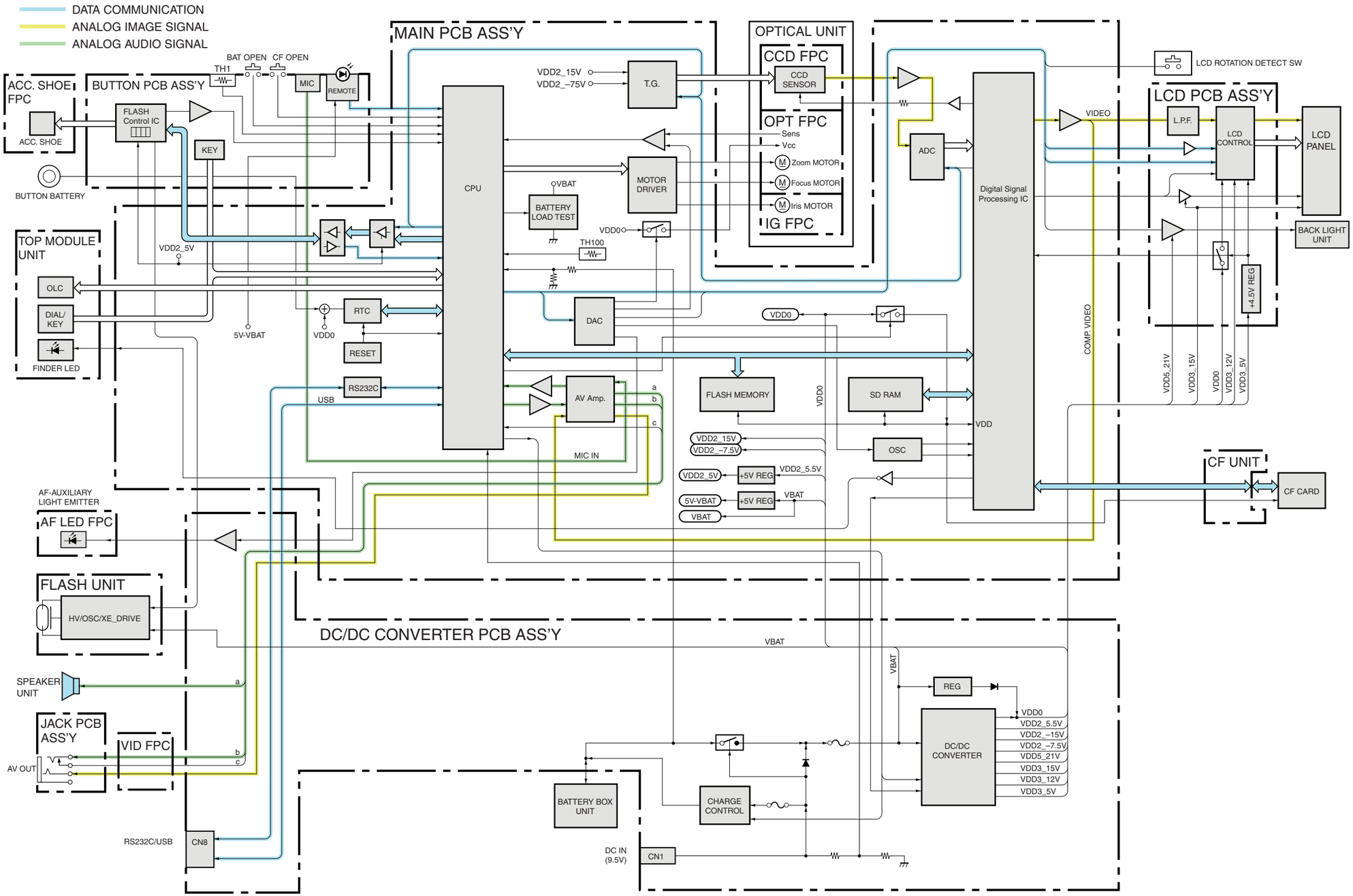
MAIN PCB ASS'Y	
CN107	
1	GND
2	V4
3	V3A
4	H2
5	H1
6	VL
7	CSUB
8	SUB
9	GND
10	H1
11	H2
12	RG
13	VDD
14	V3B
15	V2
16	V1A
17	V1B
18	GND
19	GND
20	VOUT
CN108	
1	/REG
2	A01
3	/INPACK
4	A02
5	/WAIT
6	A03
7	RESET
8	A04
9	Not Connected
10	A05
11	Not Connected
12	A06
13	VCC
14	VCC
15	IREQ
16	A07
17	/WE
18	A08
19	/IOWR
20	A09
21	/IORD
22	/OE
23	Not Connected
24	A10
25	/CE2
26	GND
27	/CD2
28	D10
29	/IOIS16
30	D09
31	D02
32	D08
33	D01
34	/STSCHG
35	D00
36	Not Connected
37	A00
38	/CE1
39	D15
40	DO7
41	D14
42	D06
43	D13
44	D05
45	D12
46	D04
47	D11
48	D03
49	/CD1
50	GND

DC/DC CONV.PCB ASS'Y	
CN1	
1	GND
2	DC_IN
3	Not Connected
4	GND
5	GND
CN2	
1	BATT
2	GND
CN3	
1	IGBT
2	VBAT
3	SENSE
4	OSC
5	GND
CN4	
1	REDCONT SW
2	VDD2_5.5
CN5	
1	PS
2	I_SENSE
3	DC_J_DET
4	CHG_CS
5	Not Connected
6	Not Connected
7	REDCONT
8	RX
9	TX
10	E5LAT
11	E3LAT
12	E2LAT
13	VDD3(12.0V)
14	VDD2(15.0V)
15	VDD3(5.0V)
16	VDD5(21V)
17	VDD2(-7.5V)
18	VDD3(15.0V)
19	VDD0(3.3V)
20	VDD0(3.3V)
21	VDD0(3.3V)
22	GND
23	GND
24	GND
25	GND
26	VC_DET
27	SENSE
28	OSC
29	IGBT
30	VBAT
31	VBAT
32	VBUS
33	D-
34	D+
35	RESERVED
36	BAT_SENSE
37	/E0LAT
38	Not Connected
39	GND
40	SP+
41	SP-
42	VDD2(5.5V)
43	VDD2(5.5V)
44	Not Connected
45	VDD0(3.3V)
46	VDD0(3.3V)
47	VIDEO
48	LINEOUT
49	GND
50	GND
CN6	
1	SP+
2	SP-
CN7	
1	VIDEOOUT
2	GND
3	LINEOUT
4	GND
5	Not Connected
6	VIDEO_DET
CN8	
1	GND
2	RX
3	TX
4	Not Connected
5	Not Connected
6	VBUS
7	Not Connected
8	Not Connected
9	D-
10	D+
11	Not Connected
12	GND
13	GND
14	GND

CF UNIT	
CN1	
1	/REG
2	A01
3	/INPACK
4	A02
5	/WAIT
6	A03
7	RESET
8	A04
9	Not Connected
10	A05
11	Not Connected
12	A06
13	VCC
14	VCC
15	IREQ
16	A07
17	/WE
18	A08
19	/IOWR
20	A09
21	/IORD
22	/OE
23	Not Connected
24	A10
25	/CE2
26	GND
27	/CD2
28	D10
29	/IOIS16
30	D09
31	D02
32	D08
33	D01
34	/STSCHG
35	D00
36	Not Connected
37	A00
38	/CE1
39	D15
40	D07
41	D14
42	D06
43	D13
44	D05
45	D12
46	D04
47	D11
48	D03
49	/CD1
50	GND
CN2	
1	GND
2	D03
3	D04
4	D05
5	D06
6	D07
7	/CE1
8	A10
9	/OE
10	A09
11	A08
12	A07
13	VCC
14	A06
15	A05
16	A04
17	A03
18	A02
19	A01
20	A00
21	D00
22	D01
23	D02
24	/IOIS16
25	/CD2
26	/CD1
27	D11
28	D12
29	D13
30	D14
31	D15
32	/CE2
33	Not Connected
34	/IORD
35	/IOWR
36	/WE
37	IREQ
38	VCC
39	/CSEL
40	Not Connected
41	RESET
42	/WAIT
43	/INPACK
44	/REG
45	Not Connected
46	/STSCHG
47	D08
48	D09
49	D10
50	GND

3 BLOCK DIAGRAMS

3-1 OVERALL



DATA COMMUNICATION
ANALOG IMAGE SIGNAL

MAIN PCB ASS'Y (1/3)

OPTICAL UNIT

CCD FPC

IC1
CCD SENSOR
ICX252AMY

VOUT 10
V1A 5
V1B 6
V2 4
V3A 2
V3B 3
V4 1
SUB 16
CSUB 17
H1-1 14
H1-2 19
H2-1 13
H2-2 20
PG 12
VDD 11
VL 18

CN107
20 VOUT
16 V1A
17 V1B
15 V2
3 V3A
14 V3B
2 V4
8 SUB
7 CSUB
10 H1
5 H1
11 H2
4 H2
12 PG
13 VDD
6 VL

Q122
BUFFER
2SC3938
+15V

C281
C286
C266

IC127 TG
CXD2497R
V1A 41
V1B 43
V2 39
V3A 44
V3B 46
V4 40
SUB 47
H1 12
H2 13
PG 9
VDD 42
VL 45
CKI 26
OSCO 27
OSCI 28
X103
36MHz
XSHP 16
XSHD 17
ADCLK 23
MCKO 30
CCDCLK_C
VD 34
SSGOUT_1
HD 35
SSGOUT_0
SSI 31
EX 10
SCK 32
EX 9
SEN 33
EX 51
5VVDD 8,14
3.3VVDD 7,15,29

IC122 CDS_AD
AN2104N
CCDOUT1 35
CCDOUT2 36
VREFL 22
VREFH 23
VRB 18
VRT 16
DS1 33
DS2 32
ADCLK 14
SSGOUT_5 24
CPOP
SDATA 41
SCK 42
LD 40
VDD
12,21,30
31,43,46
D0 2
D9 11
AD0 224
AD9 226
10
228
234

Q125
VSUB CONT
PDTC144

+15V
V BAT
BAT_SENSE

IC130
+5V REG
TK11250BM

IC131
+3.3V REG
TK11233BM

TG, CDS_AD
Serial_1
SSG_0_1

CN101 (1/2)
36 BAT_SENSE
30
31 V BAT
19
20
21 VDD0_3.3V
45
46
42
43 VDD2_5.5V
16 VDD5_21V
14 VDD2_15V
17 VDD2_7.5V
18 VDD3_15V
13 VDD3_12V
15 VDD3_5V
27 SENSE
28 OSC
29 IGBT
12 E2LAT
11 E3LAT
10 E5LAT
26 VC_DET

FROM
DC/DC CONVERTER PCB ASS'Y

IC105 MAIN POWER SW
BD6520F
1,2
6-8
EX20
L103
L101
L102
L104
VDD0
VDD11
VDD12
VDD4
VCPU
ADIN_5
VDD2_5.5V
VDD3_15V
VDD3_12V
VDD3_5V

IC101 INV
P3_0
P3_1
P3_2
P4_7

IC121 Digital Signal
Processing IC (1/2)
F712521A

VCCA-1 71,84,93
VREF-3 69,82,95
1.65VDC
YOUT1 73
RBOUT3 91
COUT1 86
CCD2 210
CCD11 211
SSGOUT_0
SSGOUT_1 215
SSGOUT_5 221
CCDCLK_C
P2_7 15
P3_5 4
P3_6 5
P3_7 6
P4_6 252
P4_5 251
VDD 234
VDD11
P3_0 255
P3_1 256
P3_2 1
P4_7 253
NXIN 17
NXOUT 18
PXIN 32
PXOUT 31

IC120
+3.3V REG
MM1385EN
5
4
VDD 3_5V

Q118
2SC1774
Q120
2SC1774
Q119
2SC1774

IC123 S/H
7W66

Q117
2SC1774
Q116
2SC1774

Q121
IMX1

IC124
3.3/5 BUFFER
7WT126
SH1 99
SH2 100

Q116-Q121 : BUFFER

COMP. VIDEO

P3_5

CN106
Y+S 10
R-Y 11
B-Y 13
CSV 3
CSH 4
P_DET 02 7
S_D2L 8
S_CLK 9
LCD_CONT_CS 6
VHAFC 5
ROT_DET 1

TO LCD PCB
ASS'Y

EX_1
EX_0
EX_53
DA_7
EX_28
DA_2

LCD
6

LCD ROTATION
DETECT SW

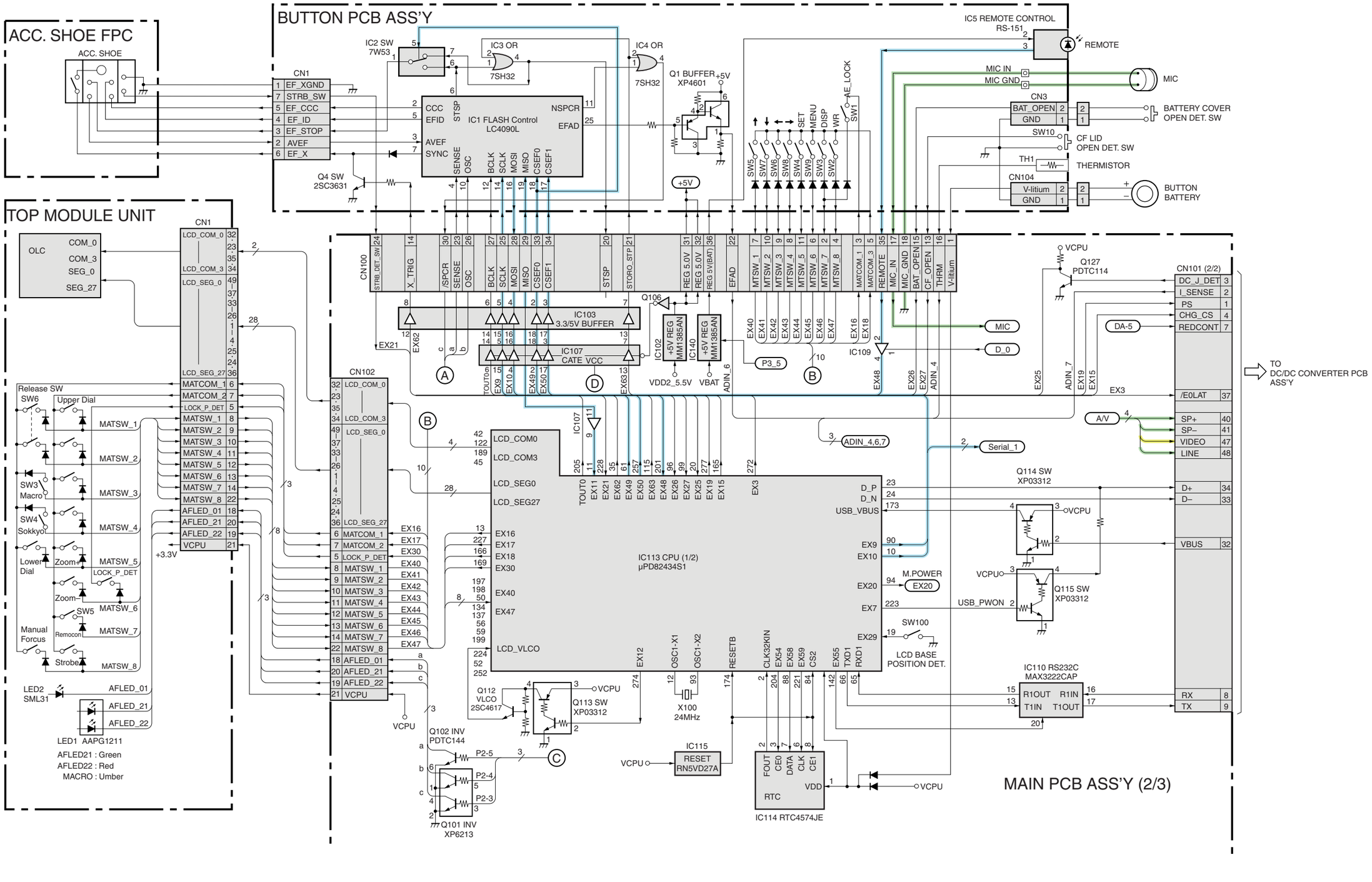
CN105
BKL_BRT 1
BKL_21V 2
LCD_12V 4
LCD_5V 5
LCD_15V 6
VDD 0 7

VDD5_21V
VDD3_12V
VDD3_5V
VDD3_15V
VDD0

TO LCD PCB
ASS'Y

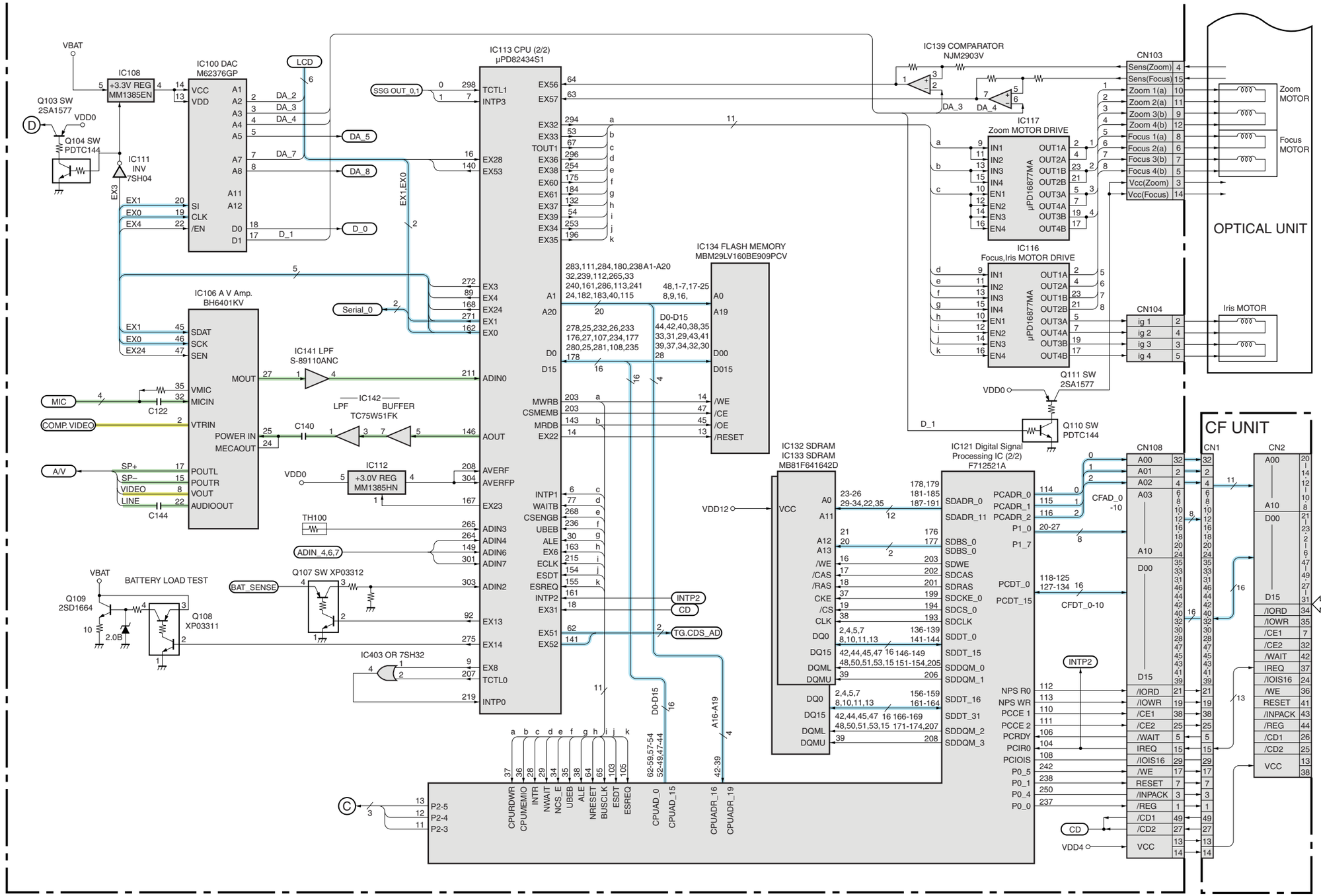
X101
14.31818MHz
CD100
CD101
X102
14.1875MHz
CD102
CD103
DA_8

DATA COMMUNICATION
ANALOG IMAGE SIGNAL
ANALOG AUDIO SIGNAL

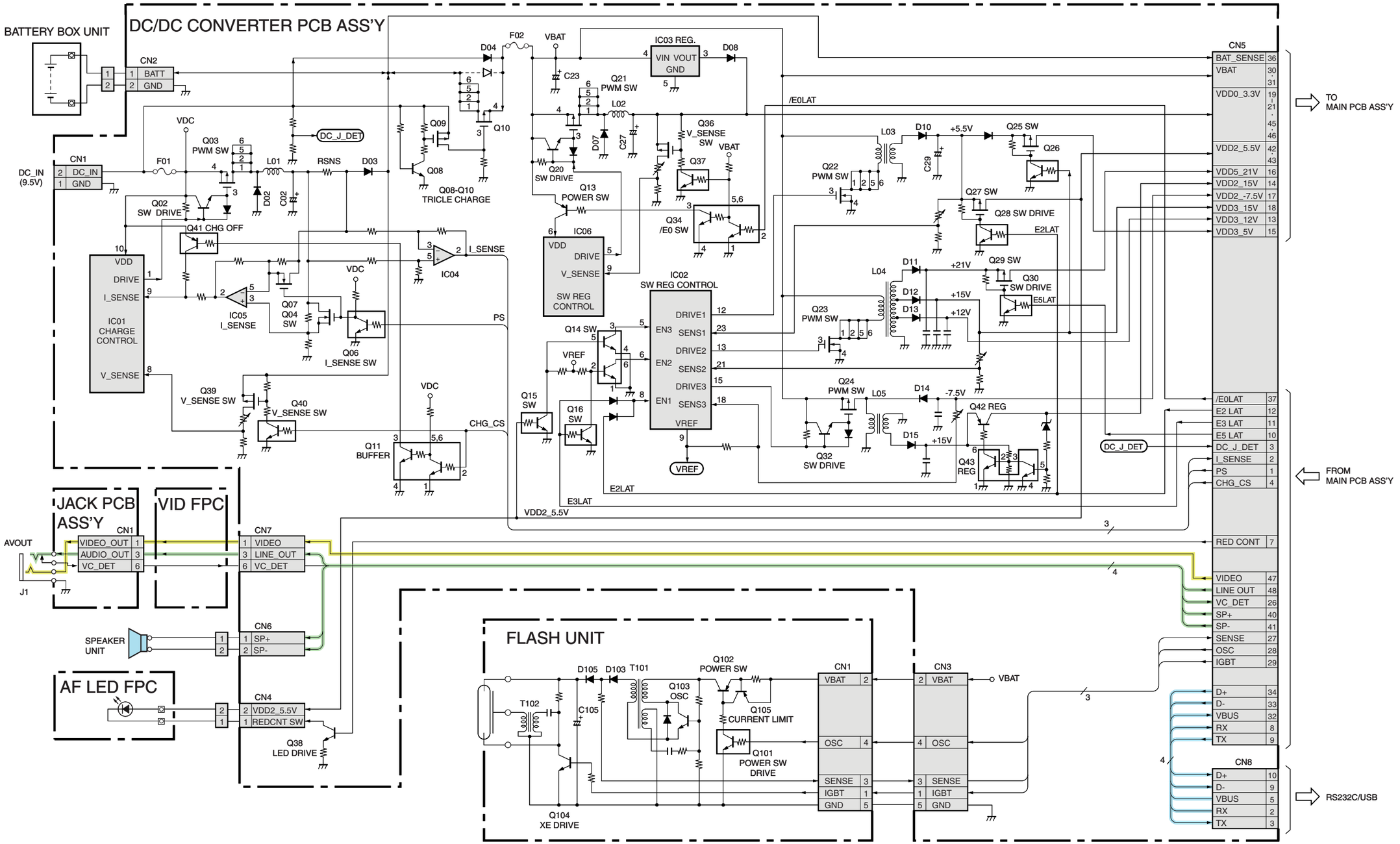


DATA COMMUNICATION
ANALOG IMAGE SIGNAL
ANALOG AUDIO SIGNAL

MAIN PCB ASS'Y (3/3)



DATA COMMUNICATION
ANALOG IMAGE SIGNAL
ANALOG AUDIO SIGNAL



DATA COMMUNICATION
ANALOG IMAGE SIGNAL